INFO WORLD

The Voice of Client/Server in the Enterprise

Divide and conquer: *Take the byte out of large, scary projects by breaking them into manageable bits.* **74**

Bob Lewis' project tips
- Know where you're going
- Limit project length
- Restrict user involvement
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HMO-mentum: *How Baxter's client/server application is keeping the health care industry competitive.* **76**

Intel plans four-chip board

■ Vendors line up behind new Pentium Pro server design

By Judy DeMocker and Luc Hatlestad

INTEL CORP. IS TAKING over design responsibilities for high-end servers by building a standardized quad-processor motherboard based on Pentium Pro processors that Digital Equipment Corp., Hewlett-Packard Co., and IBM have already agreed to use.

Products based on this motherboard, which is code-named Poca-

hontas, will start showing up by the end of this month, when HP announces a line of quad-processor Pentium Pro-based systems on May 29, sources said. Sources also said Digital is expected to announce its product plans for the motherboard in early June.

By gaining support from IBM, Digital, and HP, Intel has lined up significant allies in its bid to challenge rival server architectures based on RISC processors.

"These companies are realizing that nobody's better than Intel at designing around the Intel motherboard," said Richard Doherty, founder of Envisioneering Inc., a consulting company based in Seaford, N.Y. "This will reduce time to market and will also give users a more standard server platform to build. That's important for IS

▶ **INTEL** page 24

Internet servers

Netscape antes up for commerce

By Jim Balderston

NETSCAPE Communications Corp. this week will launch new server applications for Internet commerce that may allow the company to stake out valuable high ground in the emerging market for electronic commerce.

Netscape is aiming its Merchant, Publishing, and Community Systems at big companies looking to do business on the Internet. The new 1.5 versions of the Netscape servers will help large enterprises move information from legacy databases to the Internet and provide Netscape with applications that rival offerings from IBM and Microsoft Corp.

At the same time, Netscape has announced new partnerships with Andersen Consulting Inc. and Electronic Data Systems Corp. (EDS) to help provide support for large organizations that are creating applications intended for electronic commerce.

"EDS and Andersen do not mess

▶ **NETSCAPE** page 24

OpenDoc to get Java

■ Applets link to compound documents

By Ed Scannell and Tom Quinlan

AS PART OF A joint effort by Apple Computer Inc. and IBM to link OpenDoc's fortunes to the Internet, an extension to OpenDoc that embraces the Java development environment will be announced this week at Apple's World Wide Developers Conference.

IBM and Apple are still negotiating with Sun Microsystems Inc.

over the exact details of how to best integrate the OpenDoc and Java environments.

The negotiations focus on building hooks into Java that would let OpenDoc treat Java as an OpenDoc part by mapping Java applets to the Systems Object Model (SOM) architecture.

That mapping would let Java

▶ **OPENDOC** page 24

SITESURVEY · OS/2

Warp sites looking to exits

By Ed Scannell

MICROSOFT CORP.'S two-pronged Windows 95 and Windows NT assault appears to be eating away at OS/2 mind share at corporate IS sites, but it seems IBM still has enough support to make a fight of it.

An InfoWorld survey of 100 OS/2 sites — each with several hundred installed copies of OS/2 Warp — found that 28 percent of sites plan to decrease the number of OS/2 clients installed and another 12

▶ **OS/2** page 16

Users' OS/2 client plans in limbo

Increase installations	Decrease installations
27%	28%

Don't know	Completely eliminate installations
33%	12%

SOURCE: INFOWORLD RESEARCH

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AS EVERYONE KNOWS,
ACCOUNTANTS DON'T LIKE
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Web standards and technology

Navigator 4.0 and HTML 3.2 are in the wings

By Joane Taaffe and Marc Ferranti
NETSCAPE Communications Corp. plans to start beta testing Navigator 4.0 late in the third quarter for release before the end of the year, according to company officials.

In addition to providing a revamped mail system, Navigator 4.0 will include style sheets and new font features, according to Jeff Treuhaft, a senior product manager at Netscape, speaking at the Fifth International World Wide Web Conference in Paris last week.

The style sheets offer standard commands to replace proprietary extensions that browser makers have incorporated into HTML. They are aimed at ending a tug of war over control of the Web, according to World Wide Web Consortium (W3C) officials and industry insiders.

As things stand now, a Web page that looks fine when viewed with Netscape Navigator can look garbled when viewed with another browser, noted Hakon Lie, a researcher at INRIA, the French research institute that hosts the W3C

in Europe and is the principal developer of the style sheets.

The style sheets aim to help fix this problem by developing a standard set of commands to dress up the presentation aspect of a page, such as fonts, colored text, and headline sizes.

"There's momentum behind the style sheets now — we've got buy-in from the commercial vendors," Lie said.

Netscape decided to use the style sheets following discussions two weeks ago with some of its competitors, which are also members of the W3C, Treuhaft said.

New font features in Navigator 4.0 will be derived from Adobe Systems Inc. technology, Treuhaft said.

The W3C last week also announced HTML 3.2, which has tables, applets, and text flow added to the document-formatting specification. The specification, available now on the World Wide Web, provides backward compatibility with HTML 2.0. Pages created with the new specification can be read by browsers written to read Versio

2.0, though users will not be able to see the new features, according to the W3C.

The new specification includes features developed by the commercial software and hardware companies that belong to the W3C, as well as features created by the W3C permanent staff. The new features were already incorporated into browsers such as Navigator, W3C officials said at the conference.

A new HTML specification was expected to be announced this summer, according to W3C sources. But the announcement came early in response to the need for clarification over HTML's status, according to a W3C statement.

"It takes dynamic companies like Netscape to really push the technology. The standards bodies move slowly and approve what the commercial companies do after the fact," said Jean-Marc Fost, a Paris-based consultant who uses HTML to develop business Web pages.

Joane Taaffe and Marc Ferranti are IDG News Service correspondents.

FROM THE NEWS DESK · MICHAEL VIZARD

A modest proposal for revitalizing IBM

IBM has a problem. In a world where intranets and Java could make every platform relatively equal, IBM has too many environments.

Going forward, many of IBM's server environments (MVS, AIX, OS/400, and OS/2) will increasingly sport very similar characteristics and, as evidenced in Ed Scannell's Page One article, the company's OS/2 strategy is not likely to dislodge Microsoft Corp. from the desktop anytime soon.

So what's a multibillion-dollar behemoth to do? One solution being kicked around the halls of IBM business units is to steal a page from Netscape Communications Corp.'s plan for battling Microsoft.

For all intents and purposes, a browser has essentially become a cross-platform operating system, and HTML is well on its way to be-

coming the dominant file format. The problem facing Netscape, however, is that it doesn't have the IS support structure necessary to make Navigator the dominant user interface for the client — a fact that Microsoft is all too willing to exploit by bundling Internet Explorer with its operating systems.

But guess what? IBM *does* have that kind of support structure and a client tool, Notes 4.0, that, in addition to offering all the functionality of Navigator, provides much richer

security and replication.

So if IBM really wants to do something to rattle the corridors of both Microsoft and Netscape, it should one-up Netscape by tying OS/2 and making a dirt-cheap, HTML-enhanced, cross-platform Notes tool its primary client OS environment.

Taking this idea one step further, IBM could then make it easy and inexpensive to license the Notes API set, so it would be embedded in every server OS environment. This would mean IS managers wouldn't have to buy and manage separate Notes-and Web-aware.

Of course, this strategy might eliminate the need for a separate Lotus subsidiary, but given the consternation it would cause within IBM would be immense. But if IBM has any real hopes of turning back the Microsoft tide, this might just be the thing to do.

So is Notes the key to an IBM revival, or is it just another dosed proprietary environment whose primary purpose is to generate consulting and service revenue for IBM? Write me at michael_vizard @infoworld.com.

SUN BREWS UP KONA FOR LIGHTWEIGHT JAVA OS

Sun Microsystems Inc.'s JavaSoft business unit later this month will unveil the scaled-down, lightweight operating system version of its Java programming language, code-named Kona. Kona, which is designed for use in embedded applications with Internet terminal devices and other small or portable systems, provides the operating system underpinnings for running Java, according to Java-Soft officials. The company is working on licensing the technology to ISVs and hardware manufacturers. The system will be unveiled at JavaOne in San Francisco, the inaugural Java developer's conference hosted jointly by Sun and Netscape Communications Corp.

ROASTER PREPARES JAVA FOR MACINTOSH

Natural Intelligence Inc. will start shipping its Roaster Developer, Release 2, this week, as the company prepares for Java on the Macintosh. The Roaster toolkit is designed to enable developers to create Java applets for the Mac. Release 1.0 was originally scheduled to ship in conjunction with Apple Computer Inc.'s World Wide Developer's Conference, in San Jose, Calif. Instead, the company decided to put out a second developer's release priced at $299, with shipping now scheduled for the end of this summer.

IBI INTRODUCES CACTUS TOOL

Information Builders Inc. (IBI) later this month will announce Cactus, a high-end development tool aimed at creating large-scale three-tier applications, according to sources. The tool, which will be released this summer, will have its own scripting fourth-generation language but will later add support for Java. Cactus transaction processing applications will run on mainframes, Unix, and Windows platforms, sources said. Separately, IBI this week will announce general availability of Fusion, a multidimensional database for on-line analytical processing (OLAP) applications that works with IBI's EDA database connectivity software. Fusion, which can scale up to 60GB, can work with any ODBC-compliant front-end OLAP tool. A 16-user configuration costs $37,545 on Unix.

NDS GETS SOFTWARE LICENSING TOOL

Novell Inc. by June plans to release an enhancement to Novell Directory Services (NDS) that would make it easier to regulate software licensing in the directory. The tool is largely a user interface improvement that is likely to be a plug in to the directory's NW-Admin administration tool and function with the NetWare Application Launcher for setting up application access, the company said. Another NDS enhancement, planned for 1997, is a meta directory server for synchronizing e-mail directories.

BRIEFLY NOTED: ► **MICROFOCUS** this week at its annual user's conference, in Orlando, Fla., will announce plans to Internet-enable its development tools lineup, position its year 2000 strategy, and announce the shipment of its Visual Object Cobol tool for Windows. ► **HEWLETT-PACKARD CO.** will introduce this week system-metric multiprocessing enterprise servers, the HP 9000 Enterprise Parallel Server Model 21 (EPS21) and the HP 9000 EPS30, using a Fibre Channel interconnect. ► **ARTISOFT INC.** plans to release on June 3 a tool that makes it easier for small businesses to access the Internet. ► **MCAFEE CORP.** has withdrawn its bid for **CHEYENNE SOFTWARE INC.** in the face of opposition from Cheyenne board of directors. ► **CODA INC.** this week will unveil Version 4.0 of Coda Financials. ► **GEMSTONE SYSTEMS INC.** and **PLACE-DIGITALK** last week at ObjectWorld East announced a partnership under which they will deliver Web application development and deployment.

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Recompiling 16-bit applications just makes bloatware, *page 69*

● NEC's Versa notebooks target the multimedia corporate power user, *page 12*

GQL, Release 4, will add support for *Windows 95 and Windows NT, page 43*

AccessBuilder 5000 lets network managers set up virtual LANs over WANs, *page 59*

Oracle readies major tool upgrade

■ Java, three-tier architecture development enhanced

By Cara Cunningham

ORACLE CORP. is planning a major upgrade to its Designer 2000 and Developer 2000 tools aimed at making Java and three-tier application development easier, company officials confirmed last week.

But although Version 2.0 of the Designer 2000 modeling tool and Developer 2000 development environment, set for release at year's end, will entice Web and traditional client/server programmers, it will have limited appeal outside of Oracle shops, analysts said.

Planned enhancements to Developer 2000 and Designer 2000 include Java application generation, distributed debugging, and the first signs of Oracle's Sedona object project, officials said.

"Designer will have a model that can [generate] code that works on a classic client/server system or creates Java," said Peter Kastner, analyst with Aberdeen Group Inc., in Boston. "Even corporate developers should be concerned with this. Java is an immature language that lacks features, why not let Oracle make all of this work?"

Version 2.0's distributed debugger will help developers using the tool's partitioning feature. The debugger steps through code running on the client, but it also follows when a procedure is executed on the server and continues debugging there, said Steve Ehrlich, Oracle's director of tools product marketing.

But Oracle must stabilize its debugging environment first to make

this feature effective, an analyst said.

"The debugging environment is buggy to begin with and difficult to deal with," said Daryl Plummer, research director at Gartner Group Inc., in Stamford, Conn.

The first pieces of Oracle's Sedona will appear in Designer 2000 and Developer 2000 2.0, Ehrlich said. The tools' object browser, called Object Navigator, will be improved so developers can drag and drop stored procedure objects to and from the client, server, or the navigator. The improvements will encourage object reuse, Kastner said.

Yet not all of 2.0's enhancements will mean much to non-Oracle developers, because the tools are optimized for Oracle databases, observers said.

Hardware problems

Apple takes proactive approach to system glitches

By Tom Quinlan

IF IT WEREN'T for bad luck, Apple Computer Inc. probably wouldn't have any at all.

Last week an attempt to proactively address problems with models of the Performa 5200 and 5300, Power Macintosh 6200 and 6300, and PowerBook 5300 and 190 lines backfired when word that Apple was making contingency plans to fix the systems leaked out before the company was ready to act.

In a memo sent to resellers last week, Apple outlined a preliminary plan for fixing a series of unrelated problems with those systems that involved increasing the product warranty to seven years.

However, Apple had not completely identified the cause of crashes of the affected Performa systems, didn't have enough inventory to correct a color-registration problem with the Power Macs, and hadn't set up a facility to handle expected returns for its PowerBook models that were in danger of developing cracks in the casing or had loose power supplies.

Apple has not yet informed dealers which desktop systems will qualify for the extended warranties and free repairs through the service centers. Nor has it set up an 800 number for PowerBook users to call and find out how to get their portables repaired or upgraded.

Some dealers are worried that Mac owners will flood them with

repair requests that may not be covered by the warranty program.

"The worst thing that could happen is if hordes of Mac users that experienced a crash or weren't happy with the color on their monitors came in and expected a repair," said

Apple's problem children

Performa 5200/5300
● Faulty components can cause the system to crash Apple hasn't identified which models are affected yet.
Power Macintosh 6200/6300
● The color can unexpectedly change on some monitors. Desktop users who want information about the problems can call (800) 767-2775 or their authorized service center for more information.
PowerBook 5300 and 190
● The casing of the portables' displays can crack on the hinge, and the power supplies can come loose. Apple will have users send the systems to a centralized repair facility but has not yet set up the facility or an 800 number for users to call.

Tom Santos, principal of MacAdam, a dealer in San Francisco.

"We've only seen these problems in very rare instances," Santos said. "If a user brings in a system, and it doesn't have the problem Apple's identifying, [the user's] going to end up having to pay for service."

Apple will identify the problems and set up an 800 number as soon as possible.

The problems raise the specter of Apple's quality suffering while the company copes with 2,400 layoffs and losses that are expected to drag on for the next year.

"We're very committed to producing quality products," an Apple representative said.

Beta rollout

NT 4.0, Beta 2, arrives overdue, promises much

By Jason Pontin

MICROSOFT CORP. this week will ship the second beta versions of its Windows NT 4.0 Workstation and Server operating systems, more than six weeks later than the company's original rollout plan.

Sources close to Microsoft said that NT beta testers were dissatisfied by instabilities that showed up when developers added new features to NT.

Microsoft has reworked the OS, and 200,000 beta testers will begin receiving NT later this week, according to Megan Bliss, Windows NT Workstation product manager.

Corporate users are watching the rollout of Windows NT closely, because many companies think NT 4.0 Workstation, and not Windows 95, will be the better enterprise client. (See "IS embraces NT 4.0 beta sight unseen," Jan. 22, page 1.)

NT 4.0 Server adds several concerted features, including Peer Web Services, new Systems Policy software, and Point to Point Tunneling.

Both versions of NT 4.0 will, for the first time, include Distributed COM (formerly Network OLE), Microsoft's long-anticipated architecture for distributed computing.

"We think NT 4.0 is a better decision for us than [Windows] 95," said Dave White, CIO at the Oregon Department of Transportation, in Salem. "It meets our performance

and stability demands in a way that [Windows] 95 can't."

Even though the rollout is behind schedule, Microsoft officials insist they will make their late-summer release date.

Analysts are giving Microsoft the benefit of the doubt.

"I do think it's a realistic promise," said Dwight Davis, editor of *Windows Watcher*, in Redmond, Wash. "NT 4.0 seems to be shaping up to follow Win95's rollout schedule. You'll recall that this time last year there were reservations about

getting Win95 out in time for summer, but they made it."

Microsoft has not decided on pricing for NT 4.0 Workstation and Server, but officials said they do not anticipate any radical price changes from the current version. Windows NT 3.51 Workstation costs $319, and NT 3.51 Server costs $999 for a 10-user license.

New features in NT 4.0 Workstation
● Distributed COM
● Systems Policy software
● Crypto APIs
● Web Services
● Direct Draw
● Direct Sound

Additional new features in NT Server
● Point to Point Tunneling
● Remote Access Server auto-dial and multilink

Adobe opens in 2-D theater with Bravo image modeling suite

By Chris Jones

ADOBE SYSTEMS INC. last week made its first big play in the Internet two-dimensional graphics market with a suite of new products and announcements of partnerships with Microsoft Corp. and Sun Microsystems Inc.

The cornerstone of Adobe's announcement is a new lightweight 2-D imaging model, called Bravo. Bravo provides an API for displaying, printing, and managing high-resolution images and text over the World Wide Web and intranets.

Sun's JavaSoft Division has licensed Bravo and plans to integrate it into future implementations of Java.

"Wherever Java goes, Bravo will go," said Edward Zander, president of Sun Microsystems Computer Corp., Sun's hardware subsidiary.

Adobe announced plans to support Microsoft's ActiveX component model in future versions of PageMill, Photoshop, and Illustrator, and in its Portable Document Format (PDF) technology.

The agreement follows another agreement with Microsoft to jointly develop a universal font format, called OpenType.
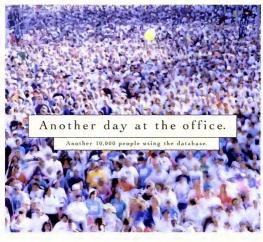
While previewing the summer

release of Acrobat Amber, its PDF software, Adobe last week showed how multilingual forms could be displayed in PDF and used to input and extract database information.

Until now, Adobe has been lagging behind Web-focused companies, such as Macromedia Inc., in the Internet graphics arena.

"It's kind of like Adobe woke up and said 'Oh yes, the Internet,'" said Amy Wohl, president of Wohl Associates, in Narberth, Pa.

Adobe also announced Vertigo, an interactive CD-ROM and Web authoring tool that's built on the Bravo imaging model and will let

developers integrate sound and video with graphics created in Photoshop, Illustrator, and other Adobe tools. The Vertigo player is now in beta and will serve as the basis for the editing environment, which is set for release sometime next year.

The company also introduced Web Presenter, a Web presentation graphics tool. A beta version for integrating multimedia files, illustrations, and links in to Web pages is available from Adobe's Web site.

PrintMill, a server-based print tool used for managing print jobs from a browser to any network printer, was also announced.

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Corporate intranets

Netscape, CompuServe host intranets

By Elinor Mills

NETSCAPE COMMUNICATIONS Corp. and CompuServe Inc. on Thursday announced a new service that will allow corporate customers' employees to work collaboratively over a corporate intranet.

The service will compete with CompuServe's Enterprise Connect for Lotus Notes, which provides similar capabilities within Lotus Development Corp.'s Notes architecture, said Jim Freeze, CompuServe's director of application-based network services.

But the Notes service, which has seen a 34 percent jump in the number of clients (or end-users) signing up since January, will continue to grow because Notes is "embracing the Internet and open systems technology and moving toward supporting HTTP natively," Freeze said.

"We're not in the business of advocating one solution over another," Freeze said. "We're in the business of offering infrastructure support ... regardless of which application [customers] choose."

CompuServe is responding to market demand for open vs. proprietary solutions, Freeze said.

"The commercial marketplace has been telling us ... that they're looking to develop similar applications [to Notes], but they want to develop on Web-based platforms," Freeze said.

With Netscape's server and browser client software, users will be able to join on-line discussions, send e-mail, and share documents over the company network, which will be hosted by CompuServe and will be linked to the Internet.

The service will be out by this year's third quarter. An announcement of a beta offering of the CompuServe and Netscape service is due in July, Freeze said.

Pricing has not been determined.

CompuServe also plans for its network to offer other groupware services besides those using Notes and Web servers, Freeze said.

The new groupware functionality in Netscape's software comes from technology the company acquired when it bought Collabra Software Inc. last year.

Elinor Mills is senior U.S. correspondent for the IDG News Service.

Microsoft to add ODSI support for NDS

By Paul Krill

MICROSOFT CORP. plans to develop Open Directory Service Interfaces (ODSI) support for Novell Inc.'s Novell Directory Services (NDS).

Novell, however, currently has no plans to support its rival's directory API effort.

A driver will be written to translate ODSI calls to NDS calls, said Mike Nash, group product manager for Windows NT Server, in Redmond, Wash.

"It's unfortunate that Novell, which clearly has NDS expertise, wouldn't do this," Nash said.

Microsoft has targeted December as the release date for the full ODSI software development kit featuring NDS support.

Microsoft's ODSI is a set of interfaces, currently under development, that will link applications on Win32 desktop platforms to back-end directory services.

Developers would not have to write interfaces to different directories on various operating platforms, provided the server directory supports ODSI.

Novell is backing its own Net2000 API kit as the method for application access to NDS, noted William Donahoo, Novell vice president of NetWare marketing, in Orem, Utah.

But Novell will consider supporting ODSI in Net2000 if it becomes important to users, Donahoo said.

A fourth and final part of ODSI, OLE Directory Services for management of common directory objects, is scheduled for beta testing in June.

Having Novell take the lead "would probably make more sense," said Mike Burstein, a technical consultant at Cargill Inc., an agricultural business in Minneapolis.

"The development that comes out of Novell is usually more reliable than what I've had from Microsoft," said Tim Valis, network engineer at Ameseco Inc., a Dallas financial services company.

"However, the exact opposite has been true with NDS support in Windows 95," Valis continued.

Microsoft has offered better Universal Naming Convention support for referencing servers within applications, Valis said.

Vendors support OMG at Object World East

■ CORBA toolsets due from Digital, HP, and others

By Ted Smalley Bowen and Martin LaMonica

A HANDFUL OF KEY application development tool vendors lined up to support the Object Management Group's (OMG) CORBA cross-platform technology at last week's Object World East '96 conference.

"It's going to be a key year for CORBA. The toolsets really needed to create these [CORBA and mixed] applications are starting to fall into place," said Jim McLaughlin, an analyst with Giga Information Group, in Cambridge, Mass.

Many vendors rolled out tools for integrating client-side Common Object Model (COM)-based applications with server-based CORBA objects. That pairing, despite the OMG's endorsement of OpenDoc, is likely to account for the majority of distributed object-based applications, McLaughlin said.

"COM-CORBA interoperability is pretty much going to stay the way it is. Microsoft [Corp.] is a ways off with Distributed COM. Although the OMG anointed OpenDoc as its official desktop architecture, it's still pretty weak," McLaughlin said.

Although many vendors offer interoperability between Microsoft's OLE object model and CORBA systems, Digital Equipment Corp. plans to enhance OLE integration by bringing CORBA objects into the Windows environment.

Later this year, the company plans to release a tool called Desktop Connection to let developers take ObjectBroker CORBA-compliant objects and transform them into OLE objects that have the visual properties of Microsoft's DocObjects standard.

Desktop Connection will work with Digital's ObjectBroker for cross-platform communications between objects and Microsoft's Distributed COM for Windows NT environments.

At the conference, Hewlett-Packard Co. demonstrated component integration and round-object support, leveraging its CORBA-compliant ORB Plus 2.0 and Odapter object-relational adapter. The latter provides a common object model among disparate platforms and databases and forms the basis of HP's Federated Information Management System. Odapter runs on HP-UX and is slated to support Windows NT later this year.

HP also demonstrated the integration of OLE Automation objects and Java applets with CORBA objects via ORB Plus 2.0.

OpenDoc purveyors IBM and Apple Computer Inc. plan to pair up to make Iona Technologies Ltd.'s Orbix 2.0 CORBA object request broker (ORB) work with IBM's System Object Model (SOM). This pairing lets developers use both an own CORBA-compliant DistributedSOM product, while Apple plans to market Orbix with the OpenDoc development kits for the Macintosh, officials said.

IBM and Iona also intend to port Orbix, the second most popular ORB, to mainframe OSes MVS and IMS, which will go into beta testing this summer. Iona will also link Orbix to IBM's mainframe query system CICS and MQSeries. Ship dates have not yet been announced.

PostModern Computing Technologies Inc. announced plans to provide support later this quarter for Microsoft's ActiveX integration technology in its ORBeline and Black Widow CORBA 2.0 ORBs.

Hewlett-Packard Federated Information Management System

HP ORB Plus 2.0

ORB Plus 2.0 server object

object

Federated

Database   Database   Database

Source: HEWLETT-PACKARD CO.

GroupWise gets easier to buy

By Jessica Davis and Partha Vadlamudi

AS THE MARKET for groupware and messaging products heats up, Novell Inc. has revamped pricing to make GroupWise easy to buy and has lowered the price for small sites.

Novell will adopt, on June 1, a per-user pricing model for GroupWise. The model used to be based on a per-user price for clients, a per-server price for message servers, and a per-site price for gateways. The new model will only be based on a per-user price.

"It has simplicity going for it, and it is less expensive for small sites to buy," said Mark Levitt, messaging analyst at International Data Corp., which conducts market research in Framingham, Mass. "The advent of the Internet and intranet have forced proprietary messaging systems to be more competitive"

Novell believes the pricing will make GroupWise competitive.

"Microsoft [Corp.'s] Exchange is walking the same model that we used to walk," said Eldon Greenwood, product management director in Novell's groupware division. "This will be better for customers."

"Novell has been very successful in retaining its large enterprise sites. Microsoft has done well in small to medium businesses because of things they've done in terms of pricing," Greenwood added.

The core GroupWise package will include several components that were previously sold separately, including Client/Option on Windows, DOS, Macintosh, and Unix; Message Server, NW Admin; Asynchronous Gateway for remote client-to-server connections; API Gateway; X.25 Gateway; Message Handling Service (MHS) Gateway; List Server; GroupWise Enhancement Pack; and migration utilities for Microsoft Mail and MHS. It will not include SMTP or X.400 gateways.

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High-end notebooks

Dell to enhance Latitude Xpi notebook line

By Carolyn A. April

BY MONTH'S END, Dell Computer Corp. plans to unleash a new, high-end Pentium notebook line, according to sources.

The LM P-133ST notebook will expand on Dell's existing Latitude Xpi series by featuring a 12.1-inch active matrix screen and internal quad-speed CD-ROM drive. Like its predecessor, the LM P-133ST will sport a 133-MHz Pentium processor, 128-bit graphics accelerator, as much as 40MB of RAM, two Type II or one Type III PC Card slots, and a 540MB hard drive, expandable to 810MB.

According to industry observers, it is likely that the unit's storage capacity will also be increased.

Historically, Dell has had to play catch-up with major notebook vendors such as Compaq Computer Corp., IBM, and Toshiba America Information Systems Inc. in the corporate arena, and although the new screen size and the inclusion of a CD-ROM drive will make it more competitive, the question is whether IS managers will bite based on these new features alone.

Frank Petersmark, an IS manager at Amerisure & Co. insurance company in Southfield, Mich., said it's unlikely he would buy the new model based solely on the larger screen, but he added that his interest would be piqued by the internal CD-ROM drive.

"If you're a Dell user now without that CD-ROM, I think you'll be interested in getting it," Petersmark said. "The reality is, in business today, a lot of the documentation and information you receive is on CD."

The 7-pound notebook will be based on Intel Corp.'s Mobile Triton chip set and will include an infrared port and SoundBlaster Pro-compatible audio.

According to Dell officials, the unit's lithium ion battery has a 5 to 8 hour life, depending on how the system is used.

Dell announced the product line in Japan last week. However, officials at the direct market company's Austin, Texas, headquarters would not comment on their U.S. product plans.

Pricing on the line was unavailable, and it remains unclear if there will be more than one model.

NEC notebooks aim at mobile power users

▶ Versa line sports MPEG-1 video

By Carolyn A. April

WITH A LARGE, high-resolution screen, hardware-based MPEG-1 video, 16-bit sound, and six-speed internal CD-ROM drives, the latest notebook offerings from NEC Technologies Inc. are courting the multimedia corporate power user.

NEC officials are vexing the Pentium-based, modular Versa

NEC VERSA 6000 notebooks will feature 6X CD-ROM drives and 12.1-inch screens.

6000 series as an "integrated solution" for mobile workers.

"It's a good product, kind of [NEC's] whiz-bang, high-end, latest and greatest notebook," said Bruce Stephens, an analyst at International Data Corp., in Framingham, Mass.

Industry analysts said it appears the Mountain View, Calif., company is pitting its new series against top-of-the-line offerings from heavyweights such as IBM PC Co., Com-

paq Computer Corp., and Toshiba America Information Systems Inc.

Stephen Wittner, network manager for Centex Construction Group, in Dallas, and IBM Think-Pad devotee, said he'll evaluate the Versa 6000 line but acknowledged he'd be unlikely to switch "if the features and the price are pretty equal."

Of the line's three models, the Versa 6000H boasts a 100-MHz Pentium processor, 16MB of RAM, a 1.08GB hard drive, a six-speed internal CD-ROM, an 11.3-inch active matrix Super VGA (SVGA) display, infrared ports front and rear, and a built-in 28.8Kbps fax/modem.

The Versa 6030H is similarly configured but features a 133-MHz Pentium processor, a 12.1-inch active matrix SVGA display, and a 1.3GB hard drive.

At the high end, the Versa 6030X also includes a 133-MHz processor and 16MB of RAM, and improves on-screen quality with an XGA (1,024 by 768 pixels) resolution active matrix display. Hard drive capacity has also been increased to 1.44GB.

All models feature a lithium ion battery, which NEC says has an estimated 4 hours to run down with power saving features invoked, weigh 6.9 pounds including battery, and are 2.1 inches thick.

The models will be priced at $5,399, $5,999, and $6,499, respectively. The 6000H and 6030H will be available at the end of the month. The 6030X will ship in July.

Sybase plans hybrid object/relational database

By Martin LaMonica

AT ITS USER meeting last week Sybase Inc. sketched out a plan to develop a hybrid object/relational database that should help the company match the strategies of competitors Oracle Corp. and Informix Software Inc.

Seeking to resuscitate its tarnished image as a technological leader, the company announced Adaptive Server, a series of extensions to its SQL Server 11 database that will let users incorporate multiple types of data such as HTML, text, and images into their mainstream applications.

Sybase will modify its core database engine to manipulate certain data types, including HTML and Standardized Generic Markup Language, and will provide hooks from its engine to third-party specialized servers to handle other data types such as spatial data, text, and time-series data, company officials said.

The first third-party connections to SQL Server 11 will be announced in July; the built-in support for HTML and other structured data in the Adaptive Server will likely be available next year, Sybase officials indicated.

The hybrid database will also support the evolving SQL 3 standard for support of user-defined data types.

Sybase is seeking to differentiate itself from rivals Oracle and Informix, which are actively developing monolithic "universal" servers for handling object and relational data.

Sybase says its approach is more flexible because users can choose to deploy objects either through specialized database servers or via its ObjectConnect middleware, atop application servers.

While craving more specifics and voicing performance concerns, some users said they favored the three-tier architecture advocated by Sybase and the company's plans to form partnerships.

"I think it's a more realistic approach than Oracle's Universal Server," said Tim Johnson, principal at DRT Systems International, a division of Deloitte & Touche Consulting, in Toronto. "You can't be all things to all people."

Analysts and users noted that Sybase's object strategy announcement is geared primarily at addressing users' future requirements, rather than satisfying a pent-up demand for object support.

"It's a big marketing issue," said James Govin, financial analyst at Furman Selz, in New York. "Unless they address these different data types, they will fall further down the line and may delay some buying decisions."

Other announcements by Sybase last week included a partnership with Baan Inc. to port Baan's client/server applications to SQL Server 11 by year's end.

Sybase subsidiary Powersoft Corp. announced that its Power-Builder 5.0 development tool and InfoMaker 5.0 report writer will ship next month.

Cabletron moves into Fast Ethernet arena

By Stephen Lawson

CABLETRON SYSTEMS INC. this week will provide Fast Ethernet capabilities with embedded virtual routing services to all of its switching products.

John McConnell, president of McConnell Consulting Inc., in Boulder, Colo., said Cabletron's offerings provide flexibility.

"The user can choose the kind of switching solution they want and still get the high bandwidth," McConnell said.

Users can add high-speed connections to existing Cabletron networks and get switching, routing, and remote monitoring (RMon) management capabilities in one place with the products, Cabletron officials said.

The Rochester, N.H.-based company will introduce six Fast Ethernet products, all of which include Cabletron's management capabilities built into SmartSwitch ASIC technology. The Fast Ethernet offerings also support Cabletron's SecureFast Virtual Networking software for managing switched virtual networks.

SmartSwitch combines remote monitoring management, protection against network storms, port

mirroring for external monitoring, and auto-negotiation of half- and full-duplex 10Base-T and 100Base-T connections. Port mirroring will allow users to attach external probes for RMon 2 management.

At the low end, Cabletron will unveil a stand-alone 10Mbps switch with two Fast Ethernet uplinks, priced at $7,995. The SmartSwitch 10/100 is stackable and supports full-duplex on all ports.

For its SMMAC SmartSwitch and WorkGroup SmartSwitch, the company will offer a module with two uplinks for either 100Base-TX or 100Base-FX, priced at $3,495. A

module for high-speed workgroup and server farm connections on the SMMAC will offer five 100Base-TX or 100Base-FX ports and one uplink for 100Base-TX or 100Base-FX and will cost $8,995. For server farm and desktop connectivity on the WorkGroup SmartSwitch, another module will provide 11 100Base-T ports and the Fast Ethernet uplink and will cost $17,995.

At the data center, Cabletron is offering two Fast Ethernet modules for its MMAC-Plus switch: a 100Base-FX module for backbone connectivity, priced at $34,995, and a 100Base-TX module for server farms, priced at $23,995.

The SmartSwitch 10/100 is shipping now; all other products will be available in August.

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Ethernet, and Thomas-Conrad, a leader in high-performance networking adapters. So now we can offer you the

Network analyzer
Shomiti analyzes Fast Ethernet

By Stephen Lawson

LAN MANAGERS MYSTIFIED by the network traffic on their full-duplex Fast Ethernet connections will be able to crack those packets with a new high-capacity LAN analyzer from a start-up company called Shomiti Systems Inc.

Shipping next week, Shomiti's analyzer modules are designed to monitor Ethernet and full- or half-duplex Fast Ethernet connections at line speed, capturing and inspecting the more than 1 million packets per second that a large switching hub can transmit.

"These are the only high-speed monitoring and analysis tools that can really run wire speed," said John McConnell, president of McConnell Consulting Inc., in Boulder, Colo. "It's very clear that the transition to higher speed LANs is going to explode in the next couple of years, and without the capacity to handle this speed, administrators are going to have a lot of black holes in their networks."

Shomiti's products will also be less expensive to deploy because they can be installed in common PCs, McConnell said.

"The big thing is being able to do full duplex," said a software engineer at 3Com Corp. who is using beta versions of Shomiti products in

product testing.

The engineer, who also worked at Network General Corp., said that company's Sniffer network analyzers dropped packets when monitoring Fast Ethernet lines. And full-duplex monitoring has not been available from any vendor.

Officials at San Jose, Calif.-based Shomiti said the product achieves its high level of analyzer performance by moving packet capture and analysis to an ASIC-based module that can be installed in a standard PC. Most LAN analyzers

capture traffic on a network interface card (NIC) but rely on the PC's processor for packet analysis. This introduces bottlenecks at the bus, memory, and CPU levels on the PC.

Shomiti's Century Management Engine, based on a custom ASIC, performs most of the packet analysis inside the NIC. A 4MB or 16MB buffer on the card provides memory. As many as eight cards can be installed in one PC, so packets can be captured from eight different connections at a time.

The Century 10/100 Module will be priced at $7,499 and will use Century LAN Analyzer software. The software runs on Windows 3.1 and Windows 95, priced at $499.

Network managers can use the analyzer application as a software-only solution.

For full-duplex monitoring, Shomiti has created the Century Tap, a small box that plugs in to the middle of a wire. The Century Tap costs $399.

SHOMITI'S CENTURY LAN ANALYZER *can capture and analyze network data at wire speed.*

Gigabit Ethernet on the way

■ Cogent plans solution for year's end

By Stephen Lawson

EMERGING standards for gigabit-speed Ethernet promise to provide massive bandwidth on LAN backbones in the distant future, but one vendor's more literal approach to the problem could deliver such products by the year's end.

While two IEEE committees consider competing proposals for achieving 1Gbps speeds on Ethernet that are likely to take years to complete, Cogent Data Technologies Inc. is developing products it expects to be selling by December.

Cogent's technique simply multiplies 100Mbps Fast Ethernet using additional cables between devices. Company officials said it will cost only slightly more per port than standard 100Base-T Fast Ethernet.

"There's going to be a push of bandwidth from the bottom, rather than down from the top," said Charles Anderson, president of Cogent. "That's where the data flow is happening."

Anderson said the company supports the Gigabit Ethernet proposal currently before the IEEE but is concerned that it is geared toward backbone needs and the relatively expensive medium of fiber-optic cable. With Cogent's solution, he said, users could continue using 100Base-T Fast Ethernet and Cate-

gory 5 twisted-pair cable.

The Cogent technology uses as few as two or as many as 18 pairs of cable running 100Mbps Fast Ethernet. Cogent, a manufacturer of adapter cards and repeaters, is designing adapters with multiplexers to divide signals for transmission over the parallel cables and recombine them at the destination device.

Anderson said the technology provides scalability as well as reliability. If one channel fails, the data can be rerouted onto other channels for nonstop operation.

Anderson acknowledged that cable installation costs limit the solution to connections between workgroup servers and workgroup switches located in one room.

Meanwhile, two gigabit-speed Ethernet approaches, each of which has major corporate proponents, are advancing through the IEEE's lengthy study and approval process.

Compaq Computer Corp., 3Com Corp., Sun Microsystems Inc., and Packet Engines Inc., a technology licensing company in Union City, Calif., presented a proposal to the IEEE 802.3 committee last fall. At the same time, the IEEE 802.12 committee is working on a standard backed by Hewlett-Packard Co. and AT&T, called 1G-AnyLAN, that is similar to HP's 100VG-AnyLAN.

OS/2

percent said they plan to completely eliminate OS/2 clients.

In contrast, 27 percent said they plan to increase the number of OS/2 clients, and another 33 percent said they had not yet decided.

That level of support for OS/2 appears to be slightly lower when compared with a similar *InfoWorld* study conducted prior to the launch of Windows 95. That study found that 9 percent of sites planned to completely eliminate OS/2, and 55 percent said they would not increase their investment in OS/2. (See "Faith starts to falter for Warp's disciples," Aug. 7, 1995, page 1.)

More bad news for IBM is that 71 percent of those surveyed plan to migrate new or additional client systems to Windows NT over the next 12 months, and 53 percent said they will migrate new or additional client systems to Windows 95.

One of the primary reasons for the staunch Windows support among corporate IS sites appears to be Microsoft's standing among

third-party application developers.

"We were pretty big in with OS/2, but we felt we had to go toward NT," said an 15 professional with a large telecommunications company, based in Virginia. "We know we will be able to buy anything we'll need there. There are still too many holes in the [OS/2] applications lineup for us to deal with."

Other users said they now feel that Windows NT scales adequately in terms of performance to support mission-critical applications. They are also comfortable with the road map Microsoft has painted for its operating systems and complementary strategies, such as OLE.

"When I hear what Microsoft has to say about the things we can do with OLE and what IBM's plans are with things like OpenDoc, [Microsoft] looks more attractive," said Bill Worthington, a technical consultant with a large Florida-based communications company.

Two weeks ago at the company's Technical Interchange '96 conference, IBM officials reassured users that stronger developer support exists for OS/2 than NT.

"This is something we continue to not understand," said Wally

Casey, vice president of client product management in IBM's Personal Software Products Division. "We had about 1,000 applications out there, and OS/2 has about 3,000."

But NT Server continues to make inroads at corporate IS sites, despite a recent refresh of OS/2 Warp Server. Of the 100 sites surveyed, 28.6 percent said they plan to decrease the number of OS/2 Warp Server units installed over the next 12 months, whereas 20 percent said they plan to increase the number of OS/2 Warp Server installs. A full 40 percent, however, have yet to make up their minds.

By comparison, when asked if they had plans to install any new or additional Windows NT Servers in the next year, 65 percent of IS professionals surveyed said they did.

IBM, however, contends that OS/2 Warp Server is on a roll.

Just last week, the company announced that it has already sold 50,000 copies of the recently re-

Many OS/2 Warp Server sites take wait-and-see approach

Increase installations 20.0%

Decrease installations 28.6%

Don't know 40.0%

Completely eliminate installations 11.4%

leased OS/2 Warp Server worldwide, after less than two months of availability.

Some observers think the new version's integrated PC LAN and application server capabilities have attracted some IS shops.

"The OS/2 Warp proposition has been re-evaluated by both ISV and IS management because of its combined integration," said Brad Day, an analyst with Giga Information Group, in Cambridge, Mass.

Some users said IBM has made significant progress on the installation and configuration procedures for OS/2 Warp Server and continues to bolster its reliability in running multiple DOS and Windows sessions on OS/2 clients.

In fact, although many industry pundits continue to cite the importance of IBM providing full support for Windows 95 applications with OS/2 Warp, last week's survey found that corporate users are evenly split on the issue.

Of those surveyed, 50 percent said they considered full Windows support to be either very important or somewhat important. But 46 percent said they felt it was either not very important or not at all important.

So although OS/2 may be on the ropes, IBM still appears to have enough support to make the operating system a viable environment going forward.

"We have been real happy with it in terms of reliably running multiple sessions, and the installation and configuration was done in four hours," said one IS professional with a federal military agency. "We are going to wait on Merlin [the next version of OS/2 Warp] though, to see how that turns out."

Open Group sets 'net security standards

By Mark Leon

IN RESPONSE TO greater demand for Internet security, the Open Group, an organization created by the merger of X/Open Co. Ltd. and the Open Software Foundation, has released the first in a series of security standards.

The baseline security specification defines

a consistent set of default security functions across different platforms. A secure communications services specification defines a set of secure associations for applications that need to communicate over heterogeneous networks. The communications specification provides a way for applications to authenti-

cate one another and protect the data that flows between them.

"This isn't the high-level security that might be required by governments and military organizations," said Dean Adams, the Open Group's manager of security and electronic commerce. "This is commercial-grade secur-

ity that has been defined by 150 companies around the world."

Analysts said the specifications are needed but noted the lack of crucial vendor support.

"One would think it advantageous to have Internet security standards set by an open body," said Ira Machefsky, an analyst with Giga Information Group, in Santa Clara, Calif. "But Microsoft [Corp.] isn't participating, so you have to wonder if anyone is going to care what the Open Group does."

The Open Group has lined up support from IBM, Sun Microsystems Inc., and Hewlett-Packard Co., and the secure communications specification is already being deployed in Distributed Computing Environment, Version 1.1, and in Oracle Corp.'s Network Services.

The Open Group plans to address single sign-on, Internet firewalls, cryptography, distributed auditing, and backup and restoration in future security specifications, Adams said.

"We are confident that this will be a huge success," Adams said. "We define the standards and operate a branding program to enforce compliance."

The Open Group brand costs $45,000.

3DLABS, TI TO PRODUCE 3-D GRAPHICS CHIPS

By Tom Quinlan

REACTING TO the possibility that Intel Corp. might produce its own 3-D graphics chips, 3Dlabs Inc. has signed a technology and manufacturing agreement with another semiconductor heavyweight, Texas Instruments Inc. (See "Intel buys graphic technology, will market its own 3-D chip," April 29, page 32.)

The agreement will give TI the rights to 3Dlabs' Promedia 3-D graphics engine technology and give 3Dlabs the rights to TI's RAM DAC (digital-analog converter) technology. When TI's RAM DAC is integrated with the Promedia engine, it will offer better performance, officials from both companies said.

But 3Dlabs will also get guaranteed production of its Promedia products from TI's extensive semiconductor plants, said Neil Trevett, vice president of marketing for the graphics-chip company.

With Intel's presumptive move into manufacturing its own graphics processors, guaranteed production is going to be a must for existing graphics companies, Trevett said.

"The stakes have been raised," Trevett noted. "Graphics companies without guaranteed access to a foundry are going to have a tough time competing when the large semiconductor companies start making graphics chips."

Both companies will market the Promedia engine with and without TI's RAM DAC.

TI decided to enter the partnership agreement with 3Dlabs because it expects that by the year 2000, 80 percent of all PC users, including corporate users, will have 3-D graphics acceleration capabilities, said Alun Roberts, strategic marketing manager for TI.

Products based on the technology will not ship from either company until the third quarter, although a separate Promedia product already developed by 3Dlabs is scheduled to ship this summer, Trevett said.

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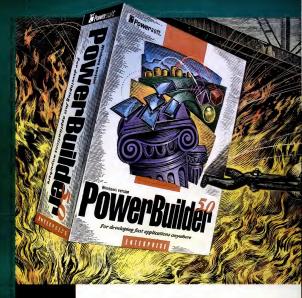
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TEXAS INSTRUMENTS

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Netscape

around with junk, and they are very respected," said Ira Machefsky, an analyst with the Santa Clara, Calif.-based Giga Information Group. "This is a big channel for Netscape, and it provides an important validation for them."

One industry observer said that bringing in established systems integrators will allow Netscape to remain focused on what it does best.

"Netscape is letting someone else who wants to do it, and is good at it, go in and mess around with legacy data systems while Netscape sticks to its core strength, the interface," said Charles Wickendon, senior product manager for information systems at Barnett Banks Inc., in Jacksonville, Fla.

At the same time, Netscape's Live-Payment application will provide small businesses with the capability to create "a virtual cash register" on their Web sites, according to Andres Espineira, Netscape's director of marketing for commercial applications.

"This allows small businesses without a lot of technical support to set up a storefront on the Internet," Espineira said. "People can tailor and develop applications on top of LivePayment."

For the time being, LivePayment will use Secure Socket Layers encryption technology for credit card security. It will support MasterCard and Visa's Secure Electronic Transaction when the standard is complete, Espineira said.

LivePayment is in beta testing now. Versions for Sun Solaris and Windows NT will ship in July priced at $2,995, Espineira said, with other platforms to follow.

Future versions of Netscape Navigator will incorporate a client version of the technology by October, company officials said.

LivePayment will support a wide range of existing payment protocols, including those of Master-Card, GE Capital, First Data Corp.,

and CyberCash Inc.

"The real exciting thing about LivePayment is that they have taken all the pieces of the puzzle and put them together," Wickendon said.

According to Magdalena Yesil, co-founder of San Francisco-based CyberCash, LivePayment will likely help Netscape as it fights to establish a leadership position in the market for Internet commerce technology.

"This allows the user to do transactions with a browser. It is a very important positioning for Netscape," Yesil said.

Netscape's approach is the first complete solution that will be suitable for small businesses, according to Machefsky.

"Netscape offers a complete package to the merchant, with links into the financial institutions. That was not available before," Machefsky added.

"This is a make-or-break year for commerce over the 'net, and these two packages will be key," Wickendon said.

"Innovative companies are recognizing that on-line commerce is the low-cost distribution channel of the future," said Steven Johnson, managing partner of electronic commerce for Andersen.

Intel

managers with a mixed-platform server environment."

The standard PocalĐeltas server motherboard will support Windows NT, Unix, and OS/2. Initially, the system will ship with four 166-MHz Pentium Pro chips at a price expected to be about $20,000 for a fully configured system, sources said. A server using the 200-MHz Pentium Pro with 512KB of Level 2 cache will ship in the third quarter.

The motherboard design will include a 66-MHz system bus that supports a bandwidth of 533MBps and a dual PCI bus architecture that supports six PCI slots and four EISA slots. Other features include support for hot-swappable drive bays and redundant power supplies.

Standard configurations will include 1GB of Extended Data Out SIMM memory that can be increased to as much as 4GB using dual in-line memory modules.

Although Intel will initially support only a limited number of system vendors, eventually the motherboard design will be thrown open to most high-end server manufacturers, sources said.

This could result in a fundamental shift in the way OEMs develop and ship servers, analysts said.

Intel's doing a lot more work on multiprocessing boards, especially for emerging technologies, and taking them to the general population," said Rob Enderle, an analyst at Dataquest Inc., in San Jose, Calif.

"The boards allow vendors to get [the product] to market faster and enable OEMs to keep from having to sink a lot of R&D dollars into quad-processor systems."

Industry observers expect other major PC server vendors to join HP, Digital, and IBM on the Intel bandwagon, but an influx of Intel server motherboards doesn't necessarily signal a move toward standardization, analysts said.

"This is a server package for OEMs who aren't ready to deliver their own just yet," said Martin Reynolds, another Dataquest analyst. "[The products] won't be released as an optimal server solution, but they'll hold the OEMs' place in the market until [the OEMs] can develop their own specifications."

These quad-processors will provide a real performance boost.

"The four-way server is much better than anything we've seen in the past," Reynolds said. "It supports many more users than dual-processor systems, which enables more cost-effective applications, such as sorts and searches."

Tom Quinlan contributed to this article.

OpenDoc

applets work as parts of a larger compound document and give Java access to OpenDoc's CORBA-based object request brokers, sources said.

Apple is expected to announce its plans for integrating Java into OpenDoc for System 7.5 and Copland this week.

IBM, meanwhile, will tightly integrate OpenDoc 1.0 with Java in the next version of OS/2 Warp for the desktop, which is code-named Merlin and is due in the fourth quarter. The company will do the same with its OpenDoc-enabled AIX OS and Java. That version of AIX is now in beta testing.

IBM will also use OpenDoc and Java to more tightly integrate its disparate system architectures, IBM executives said. The company will use an object request broker technology, such as the one it licensed from Iona Technologies Ltd. last week, to allow OpenDoc–enabled versions of OS/2 Warp and AIX to access and bring down via Java applets the data that resides in its OS/400 and OS/390 operating systems.

The move to seamlessly weave Java support into operating systems from IBM and Apple is seen as crucial to the two companies' efforts to

blunt Microsoft Corp.'s ActiveX-based Internet strategy.

"This is really the third time is a charm for OpenDoc," said Richard Doherty, founder of Envisioneering Inc., a research company in Seaford, N.Y. "They need a compelling argument to get developers to use it instead of OLE."

Sun, its subsidiary JavaSoft, Apple, and IBM are currently in negotiations to determine exactly how

much of the OpenDoc–Java integration will become part of the basic Java infrastructure.

"We're still negotiating with Sun to determine how to have OpenDoc best work with Java," said Larry Tesler, vice president of Internet platforms at Apple. "But there are a number of ways that the two technologies could benefit from being tightly integrated."

One of those ways would be to give OpenDoc the capability to

trea Java applets as OpenDoc parts to provide a compound document architecture that Java currently lacks. IBM officials said that all parts created by OpenDoc will automatically treat Java applets as OpenDoc parts.
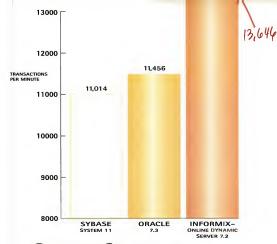
"You should be able to drag and drop any Java applet onto any OpenDoc part and have it work seamlessly," said Scott Hebner, IBM's manager of OpenDoc solutions, at last week's Object World show in Boston. "The goal is to integrate all of this information."

In part, seamlessly integrating OpenDoc and Java involves directly mapping IBM's SOM and Java, instead of just doing simple encapsulation of data, said Anthony Brown, IBM's manager of object management technology.

IBM will deliver the beta version of OpenDoc for Windows 95 and Windows NT by the end of June, Hebner said. The final product is expected to ship by the end of the third quarter.

Apple is already shipping OpenDoc 1.0 so developers and gain a general introduction of the software this summer, with OpenDoc-enabled applications starting to appear in June.

Vendors initiate DVD-ROM storehouse for developers

■ Center will boost access to related data

By Luc Hatlestad

A CONSORTIUM OF industry heavyweights — including Intel Corp., Microsoft Corp., Compaq Computer Corp., and Toshiba America Information Systems Inc. — will announce this week an initiative that will provide Digital Video Disk (DVD)-ROM developers with a storehouse of information, support, and services.

The DVD-ROM Developer Relations Initiative will offer a headquarters of sorts where developers can retrieve technological specifications, copyright information, authoring tools, and other data.

DVD-ROM is expected to emerge in 1997 as the next step in the evolution of CD-ROM technology. DVD's primary advantage over CD's is its capacity: A CD can store about 680MB of information, but initial DVD releases will hold as much as 8.5GB on a single-sided, dual-layer disc. Dual-sided, dual-layer discs

will hold as much as 17GB.

Although early incarnations of DVD will be targeted for home use, developers will eventually be able to write information directly onto the disc. When this is achieved, DVD will become a useful corporate archiving tool.

"The reason video hasn't taken off in computing is because CD's don't have enough storage space to accommodate it," said Omid Rahman, an analyst at Jon Peddie Associates, a consultancy in Tiburon, Calif. "DVD's 7GB and higher storage capacity and high-resolution video will allow more multimedia content to be stored on disc, and once DVD becomes 'writable,' it can be used to back up old files."

Rahman said it would be late 1997 or early 1998 before developers will be able to write to the DVD format, but until then companies could use DVD for applications such as training videos.

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CLIENT

More features in store for Windows 95

■ Microsoft responds to OEM requests

By Jason Pontin

ONLY NINE MONTHS after shipping Windows 95, Microsoft Corp. is readying two upgrades to the 32-bit OS. The upgrades are aimed at appeasing OEMs with long lists of new features that they have been clamoring for.

"Some of this stuff we had expected to see from the get-go but never got; some of it has come up since Win95 first shipped; and the rest, I guess, is meant to bring Win95 into line with [Windows] NT," said an executive of a hardware manufacturer in Europe.

But Microsoft warns that end-users won't see much of the upgrades for awhile.

"This is about addressing the needs of OEMs, for us to support the hardware they want to build; that means this won't be making it through into the channel until 1997," said Alex Saunders, a Win95 product manager.

According to Saunders, Windows OEM Service Release, Version 2.0, which is scheduled for release to manufacturers by the middle of this year, will include the new File Allocation Table 32-file system, which improves disk space allocation to support hard drives as large as 2 terabytes; the Crypto APIs, a new set of cryptography interfaces for developers; enhancements to Win95's PC Card support that will let Windows users use multiple cards; interrupt request sharing, which lets multiple devices interrupt each other; PCI bridging and docking; new power management technologies that let systems turn themselves on and off; and the upcoming Internet Explorer 3.0.

Service Release, Version 3.0, due to ship by year's end, will include Win32 Driver Model, the universal driver model announced at the WinHEC conference last month.

The Windows OEM Service Releases will only be shipped to manufacturers, but Microsoft said users will be able to download at least some of the new features from Microsoft's Web site.

Microsoft, in Redmond, Wash., can be reached at (206) 882-8080 or http://www.microsoft.com.

Windows 95 OEM Service Release 2.0 upgrades
- ◆ FAT 32 File System
- ◆ Internet Explorer 3.0
- ◆ PC Card enhancements
- ◆ IRQ (interrupt request) sharing
- ◆ PCI bridging and docking
- ◆ Power management
- ◆ On-line and NDIS (Windows Drivers Library) updates
- ◆ Storage improvements
- ◆ ActiveMovie
- ◆ Crypto APIs
- ◆ DirectX 3.0

OS/2 Warp desktop utility
Deskman tailors workspace

By Ed Scannell

DEVELOPMENT Technologies Inc. is readying a desktop utility that lets OS/2 Warp users more easily customize, manage, and distribute their desktop environments.

Deskman/2 2.0, which entered beta testing last week, features an improved interface that lets users define several different workspaces, each with its own windows, task list, desktop, and context-sensitive help.

Corporate account managers are becoming more interested in this sort of flexibility, the company said.

"One very large corporate account came to us with a set of requirements for their corporate desktops, and we were able to accommodate them by designing a customized tool," said Noel Bergman, president of Development Technologies.

Although IS managers see some benefit to tailoring users' PCs, most said they were more interested in distribution capabilities.

"We often settle on a standard look and behavior [for users] at the IS level, although some of this product's capabilities look interesting. I like what I hear about distributing various customized configurations," said Kevin Price, a technical consultant with a large Chicago-based bank.

With the new version of Deskman, LAN administrators can customize the look, feel, and function of a user's desktop from a central site through an OS/2 Warp Server.

Customized desktops can then be downloaded to multiple users' desktops from a central site.

The product also includes a command-line interface that lets users keep frequently accessed applications and tools readily available.

The new version features live desktop synchronization, which lets users save and restore objects on the fly. Changes made to an object are automatically saved when its folder is closed and updated when the folder is reopened.

Deskman/2 2.0 will ship by the end of June, priced at $99.95.

Development Technologies is located in Columbia, S.C., and can be reached at (803) 790-9230.

Unisys goes mainstream with Aquanta desktop line

By Luc Hatlestad

UNISYS CORP. will announce this week a reorganization of its line of desktop and portable computers along with a new line of dual- and quad-processor servers.

The units will include the Aquanta family of products and will be targeted at Fortune 1000 companies that buy PCs and servers in volume.

The Aquanta product line will simplify the purchasing and support process for existing Unisys users, analysts said.

"The new positioning features a more modern, more consistent and comprehensive product set that will make things easier for existing users," said Aaron Goldberg, executive vice president of Computing Intelligence InfoCorp., a consultancy based in La Jolla, Calif. He added that Unisys could leverage its strong service and support base to attract new users.

"They already have very strong technical support and installation programs, and their pricing is competitive and forward-looking, especially for users in volume markets," Goldberg said. "The question is whether they can use this launch to establish those larger accounts."

The Aquanta desktop line includes:

● the Aquanta SC compact system, a notebook-size Pentium-based desktop PC that runs at speeds of 75 MHz to 133 MHz, with a starting price of $1,200;

● the Aquanta DX, a three-slot system that runs at Pentium speeds as fast as 166 MHz and has built-in Super VGA graphics and a PCI bus, with prices starting at $1,200;

● the Aquanta DX and DM, which run at speeds as fast as 166 MHz and have Telephony API software, a universal serial bus, optional 16-bit full-duplex audio, and prices starting at $1,972 for the DX and at $2,198 for the DM (configured as a minitower model); and

▶ UNISYS *page 34*

InfoWorld Street Prices

17-inch color monitors

Model[1]	Dot pitch	Low	High	Average	Change from February
Apple AppleVision 1710	.26mm	$829	$959	$909	-2%
CTX-1765Glte	.28mm	$635	$695	$656	+5%
Mag InnoVision DX17F	.26mm	$710	$849	$779	-2%
Nanao FlexScan T2-17	.26mm	$1,598	$1,795	$1,599	+3%
NEC MultiSync XP17	.28mm	$998	$1,195	$1,041	-3%
Nokia Multigraph 447X	.25mm	$877	$975	$912	None
Panasonic PanaSync S17	.27mm	$688	$729	$704	N/A[2]
Samsung SyncMaster 1/6Lsi	.26mm	$805	$949	$853	-1%
Sony Multiscan 17SEII	.25mm	$975	$1,109	$1,036	-1%
ViewSonic 17GS	.27mm	$769	$676	$676	-5%

InfoWorld Street Prices are based on industrywide surveys of resellers and on print advertising in computer publications and regional newspapers. Price information was collected between April 26 and May 6.

[1] *All displays are flat-screen, noninterlaced, multifrequency. MPR-II-compliant; each has a maximum resolution of 1,280 by 1,024, except for the Nanao and Samsung models, which have a maximum resolution of 1,600 by 1,200, and the Nokia model, which has a maximum resolution of 1,000 by 1,280.*

[2] *Model not included in February pricing survey.*

Compaq reduces system prices for second time in 10 weeks

TRYING TO KEEP PACE and set trends in the increasingly competitive desktop computer arena, Compaq Computer Corp. last week announced another round of price cuts of as much as 28 percent on its Pentium Pro-based Deskpro and ProLinea PCs. (See "Compaq's new models: Prices down, power

up," March 4, page 14.)

The reductions bring the entry-level price of the Deskpro XL 6150 to less than $4,000, and the Deskpro XL 6200 now comes priced for less than $5,500. Pricing for the ProLinea "ii" family now ranges from $2,900 to $3,200.

The price cuts are commensurate with

industry trends, analysts said.

"The cuts should go on for the next six months or so as companies try to concentrate on grabbing a bigger piece of the Pentium share," said Mike Feibus, principal analyst at Mercury Research Inc., a consultancy in Scottsdale, Ariz.

In a related announcement, Compaq cut server prices on its Pentium-based ProLiant 4500 and ProSignia 300 families by as much as 15 percent.

ProLiant 4500s now range in price from $11,100 to $15,700, and ProLiant 4500Rs cost between $12,300 and $16,830. ProSignia 300s range in price from $2,300 to $3,470.

Compaq also announced it will integrate Microsoft Corp.'s BackOffice 2.0 with the ProLiant and ProSignia servers by enhancing Compaq's SmartStart program to support Microsoft's Exchange Server 4.0 and Internet Information Server 1.0.

Compaq is located in Houston and can be reached at (800) 888-5858 or at http://www.compaq.com.

— Luc Hatlestad

MICRO EXPRESS MIXES PENTIUM PRO, WIN95

SWIMMING AGAINST the tide, Micro Express Inc. is now offering a Pentium Pro-based system designed for the Windows 95 market.

Unlike other manufacturers, who have recently introduced Pentium Pro systems targeted primarily for use with Windows NT, Micro Express is going after Windows 95 users with its MicroFlex-PCI Pro.

Based on the 200-MHz Pentium Pro with a built-in 256KB Level 2 cache, the system comes with 32MB of Extended Data Out RAM, a 2.4GB hard drive, four PCI slots, three ISA slots, a quad-speed CD-ROM drive, and a 64-bit graphics accelerator.

Priced at $3,499, the system is configured similarly to Natoma-based systems introduced last week by a number of hardware vendors, including Dell Computer Corp., Hewlett-Packard Co., and Micron Computer Systems Inc., but it is being targeted toward the Windows 95 market and includes a Plug and Play BIOS.

However, it remains to be seen how inter-ested Micro Express corporate customers will be in a Windows 95-oriented Pentium Pro system.

Although Windows 95 has supplanted Windows 3.x as the most popular OS, corporations are becoming increasingly interested in Windows NT, according to Steve Ballmer, executive vice president of Microsoft.

Micro Express, in Santa Ana, Calif., can be reached at (800) 989-9900.

— Tom Quinlan

Hitachi puts LAN, modem, Netscape on notebooks

By Carolyn A. April

HITACHI PC COMP. enters the crowded U.S. notebook market this week, unveiling a lineup of machines aimed at users who insist on maintaining on-the-go e-mail, Internet access, and network connectivity.

The San Jose, Calif., company is introducing two Pentium-based notebook lines: the C-series, which has a slim-form design and ranges in price from $2,199 to $4,569, and the M-series, a feature-rich multimedia family with models priced between $2,499 and $5,499. Both lines are available now.

Hitachi PC officials are touting the notebooks' integrated communications features, including a built-in 28.8Kbps fax/modem, a 10BaseT LAN, infrared ports, and a package of pre-loaded software that includes items such as Netscape Communications Corp.'s Navigator for browsing the Internet.

"We've tried to make it easier for users who need to be connected at all times and [for] their IS managers," said Craig Rittenhouse, director of product management for Hitachi PC. "As an example, one of the big problems reported by notebook users is PCMCIA cards not working. So we integrated the modem."

But some users said they are unlikely to be lured by features such as a built-in modem. According to users, it is already found in notebooks that are sold by most top-tier vendors.

"The LAN adapter feature is nice, but I like to have docking stations. And pre-loaded software doesn't impress me," said an IS manager for a health care corporation who buys from IBM and Compaq Computer Corp. "It would take more [features] for me to switch."

Hitachi can be reached at (408) 321-5000.

Hitachi notebook specifications

C-series

- 90-, 100-, or 120-MHz Pentium processor
- 8MB of RAM, 16MB DRAM video memory
- 11.3-inch dual-scan screen or 10.4- or 11.3-inch active matrix display
- 720MB or 1GB hard drive
- One type II PC Card slot
- 1.5 inches thick, 5.3 pounds

M series

- 133-MHz Pentium processor
- 16MB of RAM
- 10.4-inch TFT active display
- Two Type II PC Card slots or a single Type III PC Card slot
- Internal CD-ROM

Unisys

- The Aquanta DM/6 Pentium Pro-based miniitower system, with 256KB or 512KB of Level 2 cache, support for speeds as fast as 200 MHz, and prices starting at $5,414.

In addition, the company is offering the Aquanta MN notebook PC, which features Pentium speeds as fast as 120 MHz. Prices start at $1,200.

This week, Unisys will also will announce five new servers:

- The Aquanta ES, a dual-processor server for both Pentium and Pentium Pro processors, will run at speeds as fast as 200 MHz. It costs $3,990.

- The Aquanta DS, which supports two 166-MHz Pentiums or two 200-MHz Pentium Pros, is priced at $9,532.

- The Aquanta QS supports as many as four Pentium or Pentium Pro processors at a cost of $8,900.

- The Aquanta QR Rackmount Server supports as many as four processors. Prices start at $11,900.

- The Aquanta DR Rackmount Server, which supports two processors, has prices starting at $11,900.

All the products in the Aquanta line will ship this month.

Unisys can be reached in Blue Bell, Pa., at (215) 986-6011 or at http://www.unisys.com.

WINDOW MANAGER · BRIAN LIVINGSTON

Place any program a click away in the Windows Tray

O NE OF THE BEST, if overhyped, features of Windows 95 is the Task Bar. As even the Rolling Stones know by now, the Task Bar is the place where the Start button for Windows resides. The Start button, in turn, is supposed to make it easier for you to find and launch your various applications, Control Panel applets, and so forth.

Most Windows users have already figured out that the Task Bar can be reconfigured in a variety of ways. For example, you can point your mouse to any blank spot on the Task Bar and drag it to any edge of the screen (left, right, top, or bottom). Right-clicking a blank spot then clicking Properties enables you to set various functions. You can make the Task Bar stay on top of all other applications (or not), make the Task Bar "hide" until you slide your mouse to that edge of the screen (or not), and so on.

One of the things you haven't been able to do with the Task Bar, however, is place your favorite applications in its recessed area, where the time of day is usually displayed. This part of the Task Bar is formally called the "system notification area," but everyone just calls it the Tray. (Actually, during Windows 95 beta testing, the whole Task Bar was called the Tray. But this name was switched to the chunkier Task Bar at some point, without explanation, so we're stuck with it.)

Several applications have made the Tray their home. When you are logged on to Microsoft Corp.'s Network (MSN), for example, a tiny MSN icon appears in the Tray. You

can right-click this icon while you're on the service to send e-mail, jump to various pages, sign out, and perform other functions.

Now one company has taken matters into its own hands and given us the power of the Tray for our own use. G.L. Liadis Software Ltd., a publisher of numerous shareware applications for Windows 95, has come out with Win Tray. You put this 249KB application in your StartUp folder and gain the capability to store as many as eight icons of your choice in the Tray.

Once you've used Win Tray's easy dialog box to select the applications you want in the Tray, they show up automatically every time you start Windows. You can configure the icons to launch your favorite applications with a double-click or a single-click (your choice). You can keep Win Tray's dialog box open during your Windows session or instruct it to hide. Right-clicking any icon you place in the Tray brings up the Win Tray window again so that you can reconfigure the program, adding or removing icons from the Tray.

The Tray is usually used for small system utilities, such as resource monitors and diagnostic tools that you want to frequently check on with a click. For example, the Windows 95 Resource Meter (located at C:\WINDOWS\ RSRCMTR.EXE) automatically places itself in the Tray when you run it. Win Tray enables you to store other utilities there as well.

But there's no particular reason that you should be limited to utilities alone in the Tray. Any major application that you use frequently could be a candidate — your word processor, say, or a favorite game. These applications are probably two or three levels down in your Start menu, whereas icons in the Tray area a lot easier to find.

You can obtain a registered version of Win Tray by sending $12.50, which includes shipping, to G.L. Liadis Software, 5167 Saling Court, Columbus, Ohio, 43229. CompuServe

users can register by typing GO SWREG and selecting I.D.72274,3252. (The registered version will be sent to your e-mail address.)

On the Internet, an unregistered shareware version is available by setting your Web browser to http://www.vpm .com/gliadis. Click the Utilities keyword to download Win Tray or to see a listing of the

many other programs from this prolific shareware author.

Brian Livingston is the co-author of Windows 95 Secrets and author of three other Windows books (IDG Books). Send tips to brian_livingston @infoworld.com or fax: (206) 282-1248.

AccountMate gets new modules

■ Automated foreign currency conversion added

By Chris Jones

WITH THE ADDITION of its Bank Reconciliation and Inventory Control modules, SourceMate Information Systems Inc. last week launched Visual AccountMate, Version 2.1, accounting software for Windows 95 and Windows NT.

Aimed at small to midsize businesses, Visual AccountMate consists of eight modules that can be customized: System Manager, General Ledger, Accounts Payable, Accounts Receivable, Sales Order, Purchase Order, Bank Reconciliation, and Inventory Control. The program provides a comprehensive accounting system with built-in messaging and a Status Bar for switching between modules.

The two new modules in Visual Account-Mate provide cross-checking between banking and accounting records and an enhanced Inventory File. Other new features include a foreign currency tool for automating the conversion process and a table browser that lets

users view information in a table without generating a full report.

Users said the capability to detect and correct errors at any level of a file is a key feature of the program.

"I like the dig-down features," said John Purtill, managing partner at Purtill and Co., an accounting firm in Cheshire, Conn. "You can get as much detail as you like by starting at the top of the pyramid and working down. When you hit a data error, you change it and it rolls up to the top."

The source-code versions of Visual AccountMate's modules allow VARs and programmers of Microsoft Corp.'s Visual FoxPro to develop customized applications.

Visual AccountMate 2.1 is available now, priced at $995 per module and $1,295 for versions that include source code. Upgrades cost $195 per module.

SourceMate is located in Mill Valley, Calif., and can be reached at (415) 381-1011.

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Introducing new Microsoft Access
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Now you can bring important information to those who need it. Microsoft® Access is a desktop relational database that allows the people in your company to find and use the data they need to make better business decisions. Whether it's customer names and addresses, product inventory, sales figures or invoices, employees can retrieve and analyze information on their desktop quickly and efficiently. With new Microsoft Access, your people spend less time searching for information and more time making decisions that benefit the whole company.

Gathering information becomes intuitive so work flows without interruption.
Microsoft Access makes it easy for people to find data from various sources throughout your company's system. With Open Database Connectivity (ODBC), users can pull together data from a variety of databases, providing new insights into existing corporate data. Once data is available, the new Filter by Selection function finds answers promptly, without complex queries, and work moves quickly toward completion. And, with IntelliSense™ technology, the next generation of Wizards takes both new and experienced users step-by-step through tasks ranging in difficulty, there's never anything standing between your people and the answers they need.

Give people the tools to set their data in motion.
Now that finding information is quick and easy, users can spend more time turning it into an advantage for your company. New Microsoft Access works seamlessly with the Microsoft Office family of applications. Consistent tools, like the Answer Wizard, mean users spend less time getting started, so your company saves time and money. People have the capability to take analysis another step by using Microsoft Excel PivotTable® Wizard to see the names and numbers retrieved by Microsoft Access in a clear and dynamic way. And with the Microsoft Word Mail Merge Wizard, users can combine data like names and addresses with documents. They just select the data to merge, the document to mail, and Microsoft Access sets everything up to go.

Now your company can take full advantage of database technology.
New Microsoft Access is the desktop database designed to work with the Windows® 95 operating system and the powerful capabilities of Windows NT™ Workstation. With the introduction of Database Replication, people can take work on the road using the Windows 95 Briefcase and merge offline changes when they return. With Microsoft Office and new Microsoft Access you can bring the information your people need to their fingertips. Help them find answers. Help them use their software without it getting in the way.

Mike wants to upgrade his company to Lotus Notes Release 4.
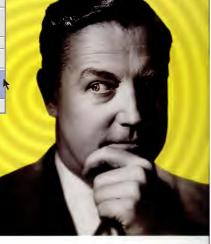
If 2,352 people in 8 departments will use it, how many servers will Mike have to add?

a) 4   b) 8   c) 12

The correct answer is:
d) None of the above.

Because Mike chose the RS/6000 Notes Server, he can add users without adding servers.

Boy, that was an easy one.

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While Lotus Notes® Release 4 can be the answer to your collaborative computing prayers, it can also raise some important questions. Like how many servers will you need to handle the added users Notes® Release 4 supports? Fortunately, there's a rather simple solution: the RS/6000™ Notes Server.

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What's more, the RS/6000 Notes Server lets you manage your entire network from one easy-to-access location.

Of course, you won't be left to figure things out on your own. RS/6000 specialists will help you design a customized solution that will best meet your collaborative computing needs.

The RS/6000 Notes Server. Think of it as a subtraction by addition.

How can the RS/6000 help simplify your move to Notes Release 4? For the answers, get our free booklet, "The RS/6000 Guide to Lotus Notes and Collaborative Computing." Call 1 800 IBM-3333, ext. F4230, or visit www.rs6000.ibm.com on the Net.

IBM

Solutions for a small planet™

Borland Corp. this week will introduce the Arsenal 1.0 sales force automation system. Available in September, it offers modules for information tracking and territory management. Pricing will range from $1,600 to $2,000 per user. It runs on Windows 3.1, Windows 95, Windows NT, and MacOS on the desktop and supports Unix and Windows NT servers. (702) 832-0300.

BUSINESS OBJECTS INC. last week announced the Universe Developer's Kit for SAP R/3 for linking Business Objects' query and on-line analytical processing tools to SAP America Inc.'s R/3 client/server application package. Now in beta testing, it will ship in June. Pricing was not announced. (408) 973-9300.

STORAGE DIMENSIONS INC. this month shipped Vantage Point 2.0, storage management software that now supports Windows NT as well as NetWare. Release 2.0 lets users monitor the performance, condition, and configuration of disk storage devices attached to NT and NetWare servers. It costs $995. (408) 954-0710 or http://www .storagedimensions.com.

SUPER MICRO COMPUTER INC. shipped this month single- and dual-processor motherboards for the Pentium and Pentium Pro processors. The P6DOF supports the 450GX chip set and costs $1,500 each in 1,000-unit quantities. The Super P55T25, which supports the 430HX chip set and has a $12KB cache, costs $260 each in 1000-unit quantities. (408) 451-1116.

PRISM SOLUTIONS INC. has shipped Prism Change Manager, a utility for updating information stored in data warehouses. The tool automatically captures changes made in transaction databases and applies changes to a data warehouse. Pricing starts at $80,000. (408) 752-1888.

Fault-tolerant NT in the works

■ Microsoft, Tandem plan fourth-quarter release

By Tom Quinlan

ANOTHER LAYER of clustering technology has been added to Microsoft Corp.'s NT server OS, as the company works with Tandem Computers Inc. to bring fault tolerance and highly scalable clustering solutions to NT.

Although products incorporating the technology won't be out until the fourth quarter, the two companies have been negotiating for more than five months to incorporate support for Nonstop Server-Ware and ServerNet into the NT architecture.

Microsoft paid $30 million toward Tandem's development costs to make sure NT had the same type of fault-tolerant and On-Line Transaction Processing (OLTP) capabilities that Tandem's proprietary Himalaya servers offered, said Steve Ballmer, executive vice president of Microsoft.

> ● Tandem entered the mainstream computing market with plans to develop a fault-tolerant, clustered, NT-based server.

"What we really wanted was Tandem's OLTP class database running on NT," Ballmer said. The SQL database, widely used for mission-critical financial applications, "is why we were willing to pay for the development of this."

Besides Tandem's porting of its ServerWare software suite — which also includes support for the Tuxedo and CICS transaction APIs and Tandem's distributed messaging environment — NT users will also gain access to Tandem's high-speed ServerNet interconnect, which will be used to link multiple NT nodes in a "shared nothing" clustered environment.

Microsoft will be adding support to Tandem's technology in its Wolf-Pack set of clustering APIs for NT. Initial support for fail-over clustering will arrive by the end of the year.

By the end of 1997, NT will be able to support clustering of as many as 16 NT nodes, Ballmer said, with support for disk farms being added in 1998.

A single-processor, plain-vanilla NT server based on Intel Corp.'s processor technology is scheduled to ship this summer, Tandem executives said. This fall the company will introduce its first fail-over NT system, with more scalable solutions scheduled to arrive over the course of the next two years.

"What this gives NT is a solution that scales into the highest reaches of the enterprise," Ballmer said, "although that might arrive in the next few weeks or the next few years or even a year from now."

What it gives Tandem is a foothold in the standards-based market, said Tandem CEO Roel Pieper.

"Customers are demanding open, scalable architectures that meet industry standards," Pieper said.

Tandem, based in Cupertino, Calif., is at (408) 285-6000.

HNC SOFTWARE READIES ON-LINE TEXT SEARCH TOOL

By Martin LaMonica
and Cara Cunningham

HNC SOFTWARE INC. is readying a specialized text server engine, based on the company's neural network technology, for sifting through large amounts of text data.

The San Diego-based company last week created a new division, called Aptex, and released the text server, dubbed Convectis, that will process searches on local servers or via the Internet and present end-users with the information as a set of categories, company officials said.

Convectis runs on Solaris and is priced from $100,000.

Just as data-mining tools sift through numerical data, Convectis searches text data for words and relationships between words to discern the meaning of documents. The server includes a tool that lets end-users enter parameters that define how searched documents should be classified.

The technology, which the company calls content mining, can be applied to images as well as text. Content mining can be used to discover and classify information as well as whittle down massive amounts of text, said John Gaffney, director of marketing at Aptex.

The server can also be used to improve customer support applications by classifying and responding to e-mail requests.

Internet-searching service provider InfoSeek Corp. will use Convectis to help speed up and automate the tedious task of creating hierarchical directories of topics found on the World Wide Web, said Daniella Russo, vice president of InfoSeek's Guide products, in Santa Clara, Calif.

"The process of collecting [information for] directories is very manually driven. We have experts prepare the hierarchy and add various sites belonging to different topics," Russo said.

Convectis can help, because the text-definition task is currently a time-consuming step that must be performed by experts who need to make context-sensitive decisions, according to Russo.

HNC Software can be reached at (619) 546-8877.

Unix file servers

Sun's NFS sever line gets UltraSparced

By Judy DeMocker

SUN MICROSYSTEMS INC. has announced the Netra NFS 150, the first of a new line of Netra file servers based on the UltraSparc processor.

The NFS 150 lets IS managers administer the Unix server through their Web browser.

"The Netra NFS 150 is groundbreaking in its ease; it's totally plug-and-play," said Tony Iams, an analyst at the market research firm D.H. Brown & Associates, in Fort Chester, N.Y. "IS managers don't even need a terminal to maintain the system. They can punch in the Internet address they wish to assign to the unit on the front panel and access it through the Web."

The Netra NFS 150 has a similar hardware configuration to the Netra 150, with a 167-MHz UltraSparc chip, a 2.1GB hard drive for system information, four 2.1GB drives dedicated to data storage, and 64MB of error-correcting code memory.

"The file server space is a very competitive area, and Sun has had a really strong presence in NFS up to this point," said Greg Garry, an analyst at Dataquest Inc., in San Jose, Calif. "What's particularly noteworthy in this announcement is the quick turnaround time on the off-site support."

The server uses a stripped-down version of Sun's Solaris OS optimized for file service, the company said, and includes RAID Level 5. The systems can support from 10 to 100 clients in a single enclosure. A rack-mounted version can support multiple servers and as many as 600 clients, the company said.

Customers can add as much as 512MB of RAM, as many as 12 internal disks, and networking options including 100MB Fast Ethernet, FDDI, and Token Ring for a high-end, fully configured system at price points of about $60,000.

The standard model is priced at $26,295 and is expected to ship in July. Both systems include one year of Sun's same-day support service.

The company kicks off its product launch with a trade-in offer of 10 percent to 15 percent off the Netra NFS 150 when customers exchange a competitor's server.

Sun, located in Mountain View, Calif., is at (800) 821-4643.

AN HTML-BASED user interface makes the Netra NFS 150 server easier to use.

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IDC INSIGHT

Meeting the Challenge of Client-Server Computing

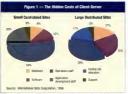# Maximizing Return-on-Investment of Network Computing

The migration to client-server computing is affecting organizations both large and small almost everywhere on the planet. Computer users today have extensive access to global network-based resources, including communication gateways to other companies, individuals, and markets worldwide. Signs of this connectedness abound:

- Last year the number of LAN users worldwide hit nearly 100 million, double the number in 1993. By 1999 the number will double again

- In the same year the number of people in the world with electronic mail boxes topped 40 million. By 1999 the number will be over 125 million

- Groupware users numbered over 30 million worldwide by the end of 1995; by 1999 they will number over 250 million

So we are heading for a wired workplace, a wired marketplace, even a wired society. However, there is a price to be paid for all this connectivity. The nearly universal implementation of client-server systems requires living with new levels of complexity and new hardware and software that people must be trained to use. Moreover, highly skilled personnel must be hired to install, manage, maintain, and administer these far-flung networks. The result is that staffing costs have become the largest contributor to total networked computing costs, regardless of the size of the installation (see Figure 1).

Until now, companies have justified the costs and complexities of client-server computing by competitive advantage—it is a very flexible and adaptable computing style. But when client-sever is the norm, where will the competitive advantage lie?

IDC believes that companies that learn to manage their networked resources through technology and training will win out over their peers in the long run. Companies that understand the true costs and true benefits of client-server computing

Figure 1 — The Hidden Costs of Client-Server

Small Centralized Sites / Large Distributed Sites

Legend: Hardware, Software, Operations staff, Application development staff, Central site allocation, Support

Source: International Data Corporation, 1996

will generate quicker return for their investments. Companies that relentlessly optimize, integrate, and upgrade existing systems will stretch IT resources farther and be able to reinvest sooner than competitors taking a wait-and-see approach.

Areas of Opportunity

IDC and Novell have teamed to produce this White Paper in order to help IT managers develop a strategy for maximizing return on investment in networked computing resources. It is the executive overview of three studies researched and written by IDC and sponsored by Novell. In the research it conducted,

Driving Down Networking Costs

GroupWise:	NetWare 4:	ManageWise:
Typical annual return-per-user of 334%	On average 15% less expensive than NT Server from Microsoft	$95,784 savings in business efficiency per 100 users
Nearly $400,000 a year saved in phone costs at Farmland Foods	50% increase in users supported by a single server	50% reduction in network downtime
Counter costs cut $16,000 a year at Sheppard, Mullin, Richter & Hampton		19.7 day payback

Figure 2 — The Investment Leverage from Groupware

Hard Benefits:

- *Individual Productivity*
  +
- *Price Savings*
  +
- *Group Productivity*
  +
- *Lower Comm Costs*
  +
- *Enterprise Transactions*
  +
- *Saved Conversion Costs*
  +
- *Lower Training Costs*

Source: International Data Corporation, 1996

IDC found three areas of networked computing that are focal points for ROI leverage:

1. The choice and use of communication applications such as e-mail and groupware

2. The choice and use of next-generation network operating systems

3. The use of advanced network and system management tools

In addition, IDC found that when products in support of all three of these areas work together in an integrated fashion—such as Novell's GroupWise, NetWare 4.1, and ManageWise products—benefits are compounded. Support and training costs are lower, conversions and upgrades occur faster, applications come on stream sooner, and downtime is reduced.

Applications for the Next Wave

The migration to client-server computing is a quest to provide users with access to information and computer resources beyond their desks. One of the key tools for this is groupware software, epitomized by Novell's GroupWise, software which integrates e-mail with scheduling, calendaring, and other workgroup oriented functions. The market for groupware is exploding as organizations find they can use it—specifically the e-mail function—as a platform for providing workgroup and even enterprise-wide access to information and resources.

In the research IDC conducted, almost half of the business benefits organizations received from migrating to groupware came from better internal and external communications. For instance, Farmland Foods, a $2 billion dollar meat processing company, found that since installing GroupWise, documents once faxed in 15 minutes now take less than five to e-mail. Further, the use of GroupWise saved almost $400,000 in voice phone calls a year.

Figure 2 illustrates how electronic communication and collaboration generate cascading benefits. Standalone desktop software can impact individual productivity, but when combined with e-mail, that software can improve the productivity of a whole workgroup, not just the individual user. If the e-mail is specifically designed to work with the desktop software and with the network software, as Novell's GroupWise is with NetWare 4.1, then those workgroup benefits are compounded.

This efficiency pays real dividends. When Sheppard, Mullin, Richter & Hampton, a Los Angeles law firm, made the move to GroupWise it found the support ratio for lawyers dropped from one assistant for every two lawyers to one for every three. GroupWise scheduling cut courier costs by $16,000 a year.

less hours in tasks as routine as setting up meetings. GroupWise e-mail cut courier costs by $16,000 a year.

For most companies, an investment in groupware is considered an incremental cost. The hardware is already in place, as is the network. Moreover, the support costs—which account for more than 50% of the cost of operating a networked PC—are shared across dozens of applications.

But even with all the hardware, network, and support costs amortized across the groupware software, its a bargain. IDC's research with Novell's GroupWise customers found that a typical installation required only about $250 in fully-loaded first-year costs—less than 5% of the annual cost of operating and supporting an end-user personal computer.

For that $250 investment, those same GroupWise customers found that their first-year return was over $800 on lowered communication and clerical costs alone. Meanwhile, they accrued an array of other concrete benefits, such as fewer meetings (and thus less travel and meeting administration), easier document handling, and so on. For every single GroupWise customer interviewed by IDC, return-on-investment exceeded expectations.

Modernizing the Network

If the LAN is the heart of client-server computing, then the network operating system is its soul. As LANs have evolved from peripheral information systems to the primary components of mission-critical systems, they have become more robust and more scalable. Along the way they have also provided IS personnel with the tools to manage network resources as never before.

In fact, network management capabilities are why many people are migrating to NetWare 4.1. With more than 375,000

licenses installed worldwide as of 1995, it is the most popular network operating system. Three key reasons for its popularity are:

- Greater functionality
- Improved management
- Directory services

Figure 3 illustrates how survey respondents believe migrating to NetWare 4.1 has enhanced network productivity—with ease of administration at the top of the list, mentioned by nearly 40% of respondents. NetWare 4.1's greater functionality has promoted companies' reliance on LANs and delivered on the ultimate promise of client-server—increased productivity.

According to recent surveys conducted by IDC, LAN managers report remarkable improvements in managing their networks under NetWare 4.1. Although they expected the number of nodes on their networks to grow by 260% in the 12 months following installation, they anticipated the number of file servers on the network would grow by only 163%. In other words, under NetWare 4.1, they expect to increase the ratio of users per server from 41 to 60—an improvement of 50%.

In addition to increasing the number of users per server, NetWare 4.1 provides a single point of administration with Novell Directory Services (NDS) that results in a lower cost of network administration. Figure 4 shows how, in medium-sized
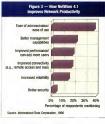
Figure 4 — Network Cost-to-Use at Medium (300 User) Sites
(Costs After Migrating from NetWare 3.X)

NetWare 4.1 ($152/month)
Software (4%) Hardware (26%)
Networking (0%)
Operations Staff (65%)

NT ($185/month)
Software (2%) Hardware (20%)
Networking (4%)
Operations Staff (74%)

Source: International Data Corporation, 1996

sites, NetWare 4.1 generates 14% lower network administration costs than Microsoft NT, primarily by increasing the user to support staff ratio.

Novell and other networking companies have set their sights on developing new technologies that will make tomorrow's networks more efficient and flexible. Novell has developed a Smart Global Network strategy, which entails making the network available to anyone—anytime, anywhere. An essential component of the Smart Global Network is Novell Directory Services (NDS), which enables companies to keep track of and connect all of a network's users, workgroups, hardware and software on one common access and administrative framework. NDS provides directory services technology that can handle the management of countless resources on heterogeneous systems spread around the globe. Also fundamental to Novell's vision of the future is an open set of application programming interfaces (APIs) that will make it easy to incorporate NDS and other NetWare 4 networking services into distributed applications.

Providing End-to-End Network Management

Staffing costs and end-user productivity are the issues that keep IS managers awake at night. And that has never been more true than it is today. As networks expand and intertwine, the critical success factors for network managers will include:

- Increasing network uptime, both in operation and when installing new users or applications

- Increasing efficiency by supporting rapid network growth without commensurate growth in staff

- Increasing responsiveness, fixing problems in a way that minimizes idle time for users or within business processes

To meet these needs, Novell offers ManageWise. It combines both network management and PC administration into a single, integrated package. Previously, most PC administration and LAN management products worked independently of one another, each requiring dedicated staff and resources.

Figure 3 — How NetWare 4.1 Improves Network Productivity

	Percentage of respondents mentioning
Ease of administration/ ease of use	
Better management capabilities	
Improved performance/ can add more users	
Improved connectivity (e.g., remote access and mail)	
Increased reliability	
Better security	

0% 10% 20% 30% 40%
Percentage of respondents mentioning

Source: International Data Corporation, 1996

ManageWise is the integrated solution that offers a single view of the network. It provides analysis tools for understanding bottlenecks; permits the configuration, inventory, and diagnostics of PCs from a single local or remote site; and provides tools for monitoring and managing remote and local servers. IDC's research demonstrates that even small and medium-sized companies can achieve significant cost savings by implementing ManageWise (see Figure 5). Network managers found that the most significant gains in efficiency were realized in server operation and help desk functions. Using ManageWise also increased LAN manager responsiveness. Before implementation, only 30% of network or end-user problems could be solved from a central site; afterwards, that number rose to 60%. This is especially important for companies with highly decentralized operations.

Since the software-licensing, maintenance, and training costs of a product like ManageWise are low compared to the number of users potentially affected, the return on investment can be surprisingly high. Across the survey base polled by IDC, ManageWise paid for itself on average within 19.7 days.

For every 100 users, implementing integrated management with ManageWise saved $95,784 annually. These savings are attributable to the following:
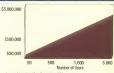
- More efficient systems management, including an increase of 33% in the number of servers and 25% in the number of PCs a staff person can support, and a decrease in travel of 53%, leading to annual cost savings of $14,500

- Significant reductions in the time required to perform key management tasks—such as five hours in moves and changes, nine hours in server maintenance and configuration, seven hours in help desk and support, four hours in problem tracking, three hours in printer maintenance, etc.—saving $30,844 annually

- Dramatic reductions in network downtime (over 50%) due to network outages, delays addressing problems at the desktop, or time spent installing and configuring applications, generating annual savings of $50,440

Cost-Savings and Client-Server: They Aren't Mutually Exclusive

Believe it or not, return on investment in networking can be quantified. While it may sometimes seem that networks are growing out of control, vendors like Novell are in fact working diligently to develop products for simplified, easily managed

Figure 5 — Average Annual Savings From ManageWise

Source: International Data Corporation, 1996

local, wide-area, and global networks. Because of the strategic and financial advantages of networking wherever systems reside and users roam, organizations will be forced to expand the reach and complexity of their networks simply to remain competitive.

Astute companies will concentrate on migrating to client-server computing in ways that maximize both the resources available to run networks and the effectiveness of those who ultimately generate revenues and profits—namely, end users.

Call to Action

This is an executive overview of a three-part series of White Papers entitled:

- Novell GroupWise: Leveraging Desktop and Network Investments

- Novell NetWare 4.1: Reducing Cost of Ownership

- Novell ManageWise: Maximizing Returns on Networking Investments

For a free copy of the Novell Business Advisor containing tools that help you assess return on investment with NetWare, ManageWise, and GroupWise, as well as electronic versions of the IDC White Papers, call 1-800-665-4586 or visit either the Novell home page at http://www.roi.novell.com or the IDC home page at http://www.idcresearch.com

Ross Systems to roll out Gembase workflow support

By Ted Smalley Bowen

CLIENT/SERVER applications and tools vendor Ross Systems Inc. is readying the addition of workflow, decision support, and Internet capabilities to its lineup.

Hoping to maintain the recent momentum in its midtier market sales, Ross will later this year and in 1997 roll out workflow support through its Gembase development language, provide decision-support capabilities for its Renaissance CS client/server applications, and begin to Internet-enable its products and services, according to vice president of marketing Don Campbell.

"We're anxious to get into the client/server products and to be able to start taking advantage of some of the GUI technologies like business objects, things that allow managers to look at information more easily," said Marjorie Nagy, a user of Ross' applications and an information specialist with Norton Diamond Film, in Northborough, Mass.

To bolster its Gembase three-tier application development environment, the company is adding open APIs for capabilities such as electronic data interchange (EDI) and workflow. The latter API would allow developers to integrate external workflow engines in Renaissance CS and other Gembase applications, Campbell said.

The company is also talking to potential partners in the workflow market, Campbell added.

"We're certainly interested in the automation possible with workflow," Nagy said. "We're moving in the direction of automating more of our processes, so [EDI support within] the accounts receivables module is of interest."

Renaissance will include applets for Renaissance financial and manufacturing applications, as well as customer service offerings that leverage the World Wide Web, Campbell said.

Ross has recently established an Internet technologies group, Campbell added.

Separately, Ross is planning a vertical market push to allow it, along with industry partners, to deliver market-specific add-ons for Renaissance, according to Campbell, who declined to provide a schedule for the initiative.

Rose earlier this year announced plans to port Renaissance to Windows NT on Digital Equipment Corp.'s Alpha platform. Renaissance applications currently run on a variety of Unix, mainframe, and minicomputer platforms, including Digital's OpenVMS.

Ross, in Redwood City, Calif., can be reached at (415) 593-2500 or http://www.rossinc.com.

Andyne will add common functions to its query tools

▶ GQL update due this summer

By Martin LaMonica

ANDYNE COMPUTING LTD. this week will take the first steps toward integrating its GQL querying and reporting tool with its existing online analytical processing (OLAP) and text-based querying tools.

The company this summer will ship a GQL, Release 4, update, a $695-per-user query tool, which will add support for Windows 95 and Windows NT and, through OLE Automation, will be capable of exporting query data to Windows-based applications.

At the same time, Andyne will improve GQL's management tool, GQL Admin, to allow IS programmers to design and make prototype query applications within the same tool.

Currently, developers must build and test these applications with separate tools.

As part of Andyne's plan to share components among its various querying tools, GQL 4 will gain a report writer and database access engine that will also be used in the company's OLAP tool, called Pablo.

Andyne will ship an upgrade to Pablo with these common components later this year.

Also later this year, Andyne will release an Internet component that will allow end-users to navigate through data stored on World Wide Web servers.

The component will be included in both GQL and Pablo.

"The Web can be used to stage information to a set of users who don't have the same discovery mode [as OLAP and querying-tool users]

and who expect to view data that is produced," said Doug Ross, president of Andyne.

"The other approach [using the Web] is for more interactive information gathering," Ross said.

GQL, RELEASE 4, will allow query data to be exported to Windows applications.

Another crucial piece of the company's Internet strategy is its upcoming text search-and-retrieval tool, called Rosetta.

Rosetta will let users access structured text for inclusion in reports and analyses. The first portion of text searching-and-retrieval capabilities will appear later this year, officials said.

Rosetta will use Standard Generalized Markup Language for tagging documents so that they can be searched later.

The tool will also support HTML so users can query and join data stored in relational or multidimensional databases, as well as on Web servers, to create a single report, officials explained.

The GQL 4 update with the common reporting engine will be available sometime in July on Windows 3.1, Windows 95, Windows NT, and Macintosh systems.

A Unix version will ship in the fourth quarter.

Andyne, located in Kingston, Ontario, can be reached at (613) 548-4355.

ViewStar add-ons ease workflow on Internet

By Pardhu Vadlamudi

VIEWSTAR CORP. is adding extensions to its high-end production workflow application in order to enable users to manage documents and images via the Internet.

The Alameda, Calif.-based company this week will unveil three Internet-enabled add-ons to its ViewStar 4.2 business process automation system for workflow, document image processing, and information management. The three applications for the Internet and intranet include InfoServer@Work, Process@Work, and Internet Transfer Task.

InfoServer@Work gives users access to unstructured information such as word processing files, spreadsheets, and images within the ViewStar Library document repository through a Web browser. It presents data in HTML format.

ViewStar's InfoServer@Work lets users compile data and images through a Web browser.

With Process@Work, users can workflow-enable Internet applications. It lets users initiate a workflow process from a Web browser, track the work, and make changes to a business process such as the routing

for a loan approval form.

The Internet Transport Task gives users a way to exchange information between ViewStar systems across the Internet. It eliminates the need for a mail system to link intranet applications for transferring data.

The Internet Transfer Task, available now, is priced at $3,000 per system. InfoServer@Work and Process@Work, due in the third quarter, are priced at $50,000 per server and $30,000 per server, respectively. ViewStar 4.2 starts at $35,000 for a 30-user system.

ViewStar can be reached at (510) 337-2000.

Digital Clusters to link Alpha-, Intel-based NT servers

By Ed Scannell

DIGITAL EQUIPMENT CORP. will deepen its commitment to its Windows NT server strategies this week when it formally rolls out clustering software that ties together Alpha and Intel-based servers.

Expected to be commercially available in June, Digital Clusters for Windows NT permits two Windows NT-based servers to be tied together through a shared SCSI bus, making it appear as a single system

to users. Desktop users with Windows for Workgroups 3.11, Windows 95, and Windows NT have transparent access to all clustered resources, including shared disks, and the ability to share files and database applications without having to know the names of individual servers. (See "NT bid takes aim at big iron," March 18, page 1.)

Digital has included its Failover Manager application with the new software, which automatically redirects interrupted services and resources to desktop systems when one server fails. Company officials said existing applications will work with the software's failover capabilities without having to be rewritten.

One advantage the new software provides users who place a priority on fault tolerance is that it lets them partition workloads and use both servers for production work simultaneously.

"This is a nice capability that

makes the whole package more attractive from an overall price-performance standpoint," said Tim McAllister, senior technical consultant with a Chicago-based railroad.

At $995 per server, Digital Clusters for NT is the first all-software solution for a Windows NT server priced at less than $1,000, company officials said.

Third-party applications that support the new software include Oracle Corp.'s Oracle Workgroup

Server 7.2 and Microsoft Corp.'s SQL Server 6.5, as well as all generic application failover support. Digital servers supported by the new software include its low-end AlphaServer 2100 series and its midrange AlphaServer 4100 line, announced just last week.

The clustering software also works with the company's Intelbased Prioris LX, HX, and ZX server models. Digital Clusters for NT works with a variety of components, including RAID subsystems, SCSI-2 disks, and SCSI adapters.

Digital, in Maynard, Mass., can be reached at (606) 232-2000.

We'd like to convince you to buy
our new HP LaserJet 5 printer,
but research says we don't have to.

HEWLETT PACKARD

Remedy adds tools to help desk suite

■ Management modules added

By Pardhu Vadlamudi

REMEDY CORP. THIS WEEK will introduce two new applications for its help desk software package.

The company is adding Change Management and Asset Management functionality to its Action Request (AR) System help desk software. Both modules will ship in June.

The Change and Asset Management modules feature an automated workflow engine for tracking user-reported problems and systems information.

With Change Management, users can customize the module to maintain and track changes to their systems. The Asset Management tool tracks an asset through its entire life cycle and also notifies users via e-mail or pager of any changes to asset information.

"There is a need for configured change coordination to manage problems," said Pat McBride, an analyst with Meta Group Inc., in Stamford, Conn. "Most vendors offer change configuration, but it's only a service request module. There is as much or a larger requirement for the back-end piece for managing larger infrastructure changes, such as moving a server."

Both the Change and Asset Management modules can be integrated with Remedy's Flashboards, a management tool that allows users to

monitor and manage help desks.

The modules are priced at $500 per user.

Pricing for the AR System starts at $6,500 for all platforms.

Remedy's AR System help desk software runs on Windows 3.1, Windows 95, and Macintosh clients

REMEDY'S *Change Management integrates with the AR System to track changes.*

and supports Unix- and Windows NT-based servers.

Remedy, in Mountain View, Calif., can be reached at (415) 903-5200.

Alantra Net serves intranet, Lotus Notes workgroups

By Tom Quinlan

A LINE OF INTRANET servers that integrate NetWare clients with Windows NT servers and the Lotus Notes database is shipping from Mobius Computer Corp.

Using Mobius' proprietary Concert gateway, Alantra Net Server allows NetWare clients to be connected to an intranet NT server while using Novell Inc.'s standard IPX protocol stacks, said Craig

Stouffer, president of Mobius.

Two basic models of the Alantra Net Server line come equipped with either a 166-MHz Pentium or a 200-MHz Pentium Pro processor.

The Pentium-based AS/1000 comes with 32MB of RAM, a 2GB hard drive, a 10/100Mbps Ethernet connection, and a five-port NT license for $4,878. A similarly configured AS/1000Pro system, with a 200-MHz Pentium Pro, a 256KB on-board Level 2 cache, and 64MB of error-correcting code memory, starts at $7,229.

Both systems come with Microsoft Corp.'s IIS Web Server and its Web browser, along with the Connex software and a SMTP/POP3 mail gateway. Support for Lotus Notes, which includes Lotus Notes 4.0 and IntraNotes for translating Notes data into an HTML format, is available as an option.

The Alantra Net Servers can support both a company's intranet and a Lotus Notes workgroup environment simultaneously in multiple windows, Stouffer said.

"You lose the workgroup functions of Lotus Notes when you put the data on the Web," Stouffer said. "What we expect is that in environments where half the users have Lotus Notes and the other half don't, IS managers will use this to give access to Notes data to the half that doesn't."

Mobius, in Pleasanton, Calif., can be reached at (800) 662-4871.

Digital prints in major league with LN line additions

■ LN17, LN17ps compete with Lexmark, HP offerings

By Judy DeMocker

DIGITAL EQUIPMENT Corp. announced last week two additions to its LN line of 17-page-per-minute (ppm) laser printers designed to bridge the gaps between PCs, Macintoshes, and workstations and to support Novell IPX/SPX, TCP/IP, AppleTalk, and LAT protocols in workgroups of 10 to 30 users.

"The LN17 brings Digital right into the mainstream and gives a printer complement that is as capable as offerings from Lexmark [International Inc.] or Hewlett-Packard [Co.]," said Ed Pallen, analyst at Computer Intelligence InfoCorp, located in Mountain View, Calif.

The downside is that they cost more. According to analysts, LN17

models use the same Fujitsu 600-dpi engine and Peerless PCL emulation as Xerox Corp.'s 4517 does, and they compete with Lexmark's 16-ppm Optra line.

"Generally, Digital's pricing is more expensive than Lexmark's," said Angele Boyd, an analyst at International Data Corp., in Framingham, Mass. "What Digital is offering are products with some support for the Digital environment, and that's what you pay extra for."

The LN17 supports Peerless-PrintSE, and the LN17ps adds support for Adobe PostScript Level 2. The products include printer management software for NetWare and peer-to-peer printing for Windows 95 users who wish to print directly

from the desktop. An optional 420MB hard drive is available for spooling and quoting capabilities. The hard disk also stores fonts and forms; it lists for $600.

Both models sport paper handling options that include a locked mailbox bin, larger output and input trays, an offset jogger, and duplex capability.

Output is 1,200 by 600 dpi using image enhancement software. The base model with 2MB of memory is priced at $2,229; the network-ready LN17ps costs $3,099 and ships with 6MB of memory and a network interface. Both models can be upgraded to 64MB of SIMM memory.

Digital, in Maynard, Mass., can be reached at (800) 777-4343.

Avoid power-down problems in chaotic college settings

I am head of CIS Training at a college in Arlington, Va. We are considering upgrading our operating system in our student labs to Windows 95 so we can teach the 32-bit versions of Visual Basic and Office. We are running NetWare 3.12 network with about 30 workstations at each campus lab. I know that if you don't properly shut down Windows 95, you can, well, mess things up. But in our environment, students often finish their work, turn the machine off, and go. Is there anything we can do short of playing "Big Brother"?

I don't envy you; academic computing environments are by far the roughest large computing enterprises to manage. No modern operating system — be it Windows 95, Unix,

OS/2, Windows NT, or even DOS with a disk cache — is designed to survive when a system is powered down unexpectedly. Running Windows from your NetWare server will provide some protection against problems but will affect performance terribly.

If money were no object, I'd recommend getting Macs; the "soft" power switches guarantee a safe landing if the machine is turned off. But since this is not likely to be an option, I recommend securing the power strips and power switches on all public PCs so that they cannot be turned off easily. Also, develop a procedure that will allow you to reload a machine's hard disk with the files it's supposed to have — either from a tape backup unit or from your NetWare server.

Unfortunately, you cannot prevent students from writing files to the hard disk or running unauthorized programs if they'll be learning Visual Basic. When I taught a Visual Basic class, I quickly discovered that Visual Basic custom controls would not install, and students' .EXE files would not run if security software was enabled.

Another important maintenance operation: Wipe and restore each workstation's hard disk regularly. This will guard against disk clutter as well as damage from untimely shutdowns. Regular virus scans — daily, if possible, or at least twice a week — should also be routine maintenance for any student computer cluster. Finally, provide a means for students to scan their own disks for viruses. Many campuses where students prepare papers using Microsoft Office have been hard hit by malevolent versions of the Concept WinWord macro virus — leading to cries of "A virus ate my homework!" Only extra vigilance can stamp out such epidemics before they begin to affect teachers and administrators as well.

My copy of MS-DOS 6.22 did not come with the full set of DOS utilities. Important programs, including BACKUP.EXE, JOIN.EXE, and SUBST.EXE, were left out. These utilities are supposed to be available on a "supplemental diskette," but I can't find them on Microsoft's Web site or on any of the BBSes I use.

Microsoft support was not helpful. How do I obtain these programs?

James Burgess

Microsoft may not actively promote MS-DOS anymore, but you can still get the supplemental disk containing several useful utilities that Microsoft omitted to reduce cost.

Call Microsoft's order line at (800) 360-7561, and ask for the "magic" part number: 147-095-340. You'll be asked for your MS-DOS serial number and charged $5 for shipping and handling. You can also download the disk's contents from Microsoft's BBS at (206) 936-6735; look for SUP622.EXE. Finally, although Microsoft claimed that the file was not on the Internet, Digital's AltaVista search engine turned up a copy at ftp://ftp.microsoft.com/PEROPSYS/MSDOS/PUBLIC/SUPPLMNT/SUP622.EXE. Supplemental disks for other versions of MS-DOS are also at this site.

Brett Glass's Help Desk answers business computing questions. To submit a query, call (800) 227-8365, Ext. 702, or send e-mail to brett_glass@infoworld.com.

Inferno puts the heat on Java

■ Lucent Technologies introduces Java competitor scheduled for fall release

By Jason Pontin

BELL LABS, the folks who brought you C, C++, Unix, and the next-generation Unix OS dubbed Plan Nine from Outer Space, last week announced Inferno, a rival to the Java platform.

At the UniForum Convention in San Francisco last February, Dennis Ritchie, the father of Unix and C, described Inferno as a Java-killer. (See "AT&T reveals plans for Java competitor," Feb. 19, page 3.)

Three months later, the research arm of AT&T spin-off Lucent Technologies Inc. has unveiled a tiny, distributed, cross-platform system for networks of conventional PCs, "thin" terminals, TV set-top boxes, smart telephones, and hand-held wireless devices.

A programming language called Limbo lets Inferno developers write interactive applications such as dynamic Web pages, e-mail, video-conferencing, multiplayer games, or even pay-per-view movies.

Applications can be installed on any Inferno platform. Unlike Java, in which all instances of an application appear the same, an Inferno application adapts to the platform on which it runs.

■ Inferno: burning Java?

○ Runs on 1MB of memory

○ Portable across Intel, MIPS, and AMD palm-top chips

○ Portable across stand-alone OS or applications under Unix, Windows NT, and Windows 95

For instance, an interactive shopping catalog would look like HTML text for users with dial-up modems, provide images for users with ISDN lines, or deliver video for those lucky enough to have cable. But analysts said Lucent may have a hard time winning developers over.

"When I first heard about Inferno it sounded fantastic," said Dan Kusnetzky, director of advanced systems research at International Data Corp. "But when I realized Inferno had its language and APIs, I thought, 'Great. Just what developers are asking for: a new set of APIs to learn.'"

The network operating system is now in alpha testing. The company hopes to license it to telephone and cable companies and electronic device manufacturers in September.

Lucent, in Murray Hill, N.J., is at (201) 635-6699. A white paper on Inferno is published at http://www.inferno.bell-labs.com.

Internet search technology

AltaVista will be licensed to corporations

By Cara Cunningham

DIGITAL EQUIPMENT Corp. announced last week that it plans to sell its AltaVista Internet search technology to large corporations.

Digital Chairman Robert Palmer said that the company will do beta tests in June of three versions of AltaVista, each targeted at distinct types of users: individuals, members of a company's departmental workgroup, and those throughout the enterprise.

Palmer conceded that Digital is not known for providing corporate customers with Internet solutions, despite the success of AltaVista's search technology on the Internet.

The quality of the AltaVista Search software, combined with the computing power of Digital's Alpha-based servers and 64-bit operating system that AltaVista Search Enterprise Editions will run on, will quickly give the company the name recognition it needs, Palmer said.

"It's the quality of the product, plus the speed to market, as well as the new business unit that is like an independent software vendor within Digital, that are the perfect ways to react to this huge [Internet] market," said James Brady, vice president of marketing and sales with USAinternet Direct, which is based in Danvers, Mass.

Digital also announced today that it will pull together new and existing products, for Internet-based e-mail, collaboration, security, and management, and sell them as complements to AltaVista Search.

Pricing and commercial availability for the AltaVista products will be announced in June.

THE WEB HOT LIST

Web sites worth checking out

Travelling Software http://www.travsoft.com ► Bothell, Wash.–based Travelling Software Inc. showcases its mobile access software products. Download a beta copy of WMtrack Delivery, software used for storing Web pages on a hard drive for the purpose of off-line viewing.

IBM Intranet and Client/Server http://www.csc.ibm.com ► A host of information and resources can be found on this site, including IBM customer case studies. Learn about IBM's Advisor System, or read a report on how the Web has changed client/server and networked computing.

Intergraph Computer Systems http://www.Intergraph.com ► Intergraph features information on its line of hardware products, including the Microsoft Windows NT–based InterServe Web servers. Read about building a secure Internet connection using firewall technology.

Time-cast http://www.timecast.com ► Progressive Networks Inc. uses its RealAudio technology to deliver streaming audio news content from a variety of sources. The Daily Briefing feature allows users to build a customized newscast, which can include technology industry updates.

Information Advantage http://www.Infoadvan.com ► On-line analytical processing solutions and data warehousing technologies are the focus of Information Advantage Inc.'s site. The White Papers section contains data on three-tier client/server architectures and corporate Intranets.

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HOTSEAT *IBM's Don Haile must bring the company's networking software into the brave new world of the intranet*

IBM takes on IP

IBM HAS JUMPED into the corporate intranet market with both feet. *InfoWorld's* Michael Parsons spoke to Don Haile, general manager of IBM's networking software division, about the company's strategy for exploiting the massive growth in IP-based networks.

Organizations want to choose one main network protocol, and they're choosing IP. How does this affect Systems Network Architecture (SNA)?

Our evolution has gotten us to two primary networking protocols, IP and SNA, and we implement both across all platforms. We are almost at parity in terms of investment in

escb. We announced last month our Enterprise Communication Servers, and we're taking the IP and SNA stack and providing them in a single package. Frankly, we're taking the best parts of VTAM [Virtual Telecommunications Access Method], which is truly a refined piece of code, putting the IP stack in it, and giving the customer the best of both worlds.

You're going to see better IP implementations with much better performance, second half of this year, first quarter of next year. I need to see on the SNA side this concept of High Performance

Routing evolving more and more: We have it on our routers, we're going to see it on other vendor's platforms, and Cisco will announce that very soon.

There is a lot of hype in the Internet/intranet marketplace, and IBM knows large networks. Are intranets really different from existing large enterprise networks?

We are moving away with our implementations from the days when running a network entailed departments of registrars and watchers. We're moving to an environment where running a network entails good preparation and a valid design — most of which can be outsourced. People need to realize that intranets are not drop-in solutions. A network requires an effort to install and to maintain, and there's no getting around that.

Network management is key. What's the plan?

I think that with our acquisition of Tivoli we come damn close to best of breed across the board. They brought a great administrative capability. They help administer OS and subsystems, Oracle, and Windows NT, Sybase, Informix, and they do a large amount of administrative management. I'm driving to make management of Eagle 2.0 [the next version of IBM's server suite] a common administrative process.

Microsoft has done well with its Back Office. How will Eagle compete?

We have to integrate the seven Eagle servers. Our competition has done a pretty fair job in terms of getting a consistent set of integration and configuration protocols. We can't continue to ask our customers to install

their servers in different ways. The second phase is administration, and we're getting pretty good at GUIs. Let's get a consistent directory mechanism. I think Tivoli can be a big part of that. Our challenge is doing it with multiple operating systems.

How can IBM get best-of-breed products when the company has such a broad product line?

Clearly in the mainframe-access market, our SNA implementations are absolutely outstanding. Our gateways and servers are close to the best, as are our OS/2 implementations. Also, nobody does better than CICS, and I am personally ecstatic about the message queuing technology, MQ Series. We are probably struggling a little more on hardware. Our ATM adapters are probably best of breed; we're probably focused more than most on providing low-cost multimedia for the campus and enterprise environment. We're also doing much better on cross-platform support. This is an evolutionary change. I've seen us emerge from "We don't do that," to "We have to at least support the devices attached to us," to "We have to support all these clients."

Salvo will run mainframe applications over the Web

By Yvonne L. Lee

WHILE THE MAJOR system vendors reroute big iron for the Web, Simware Inc. has begun shipping a family of Salvo products that make mainframe applications accessible from the Web.

The company has also announced another server enhanced to support object-oriented databases and additional host platforms.

Simware's Salvo products translate IBM 3270 data streams to HTML on the fly. The products also include development tools to add a friendlier and more Web-like face to the mainframe applications.

Salvo Personal Edition, originally scheduled to ship in February, transfers a 3270 session onto a Web page. The $49 product is designed to enable users to access 3270 applications without buying a separate terminal emulator. Demonstration copies of the Salvo Personal Edition can be downloaded from http://www.simware.com/salvo/.

The Salvo Server Edition, priced at $1,995 for a 10-user concurrent pack, extends Salvo's reach so that users can operate the 3270 applications from any browser. End-users can access applications residing on hosts systems regardless of whether

their client workstations have a terminal emulator or Salvo Personal Edition.

With the Server Edition, organizations can build a customized 3270 application into a Web site. Originally scheduled to ship in April, the Server Edition is now shipping.

Simware has announced plans for new products in the Salvo line. The first product, Salvo Server 2.0, includes support for ODBC-compatible databases, including Oracle, Informix, Sybase, and DB2. It also features object support and the capability to support additional hosts. The current version works with IBM mainframe applications; Version 2.0 will work with AS/400 and Unix applications by emulating the 5250 and VT family of terminals. Salvo Server 2.0 is scheduled for August shipment.

The second product, Salvo Server Lite, enables organizations to incorporate terminal sessions on Web pages. However, it does not include support for the use of Web interfaces during 3270 terminal emulation sessions.

Salvo Server Lite is scheduled to ship in June.

Simware, based in Ottawa, can be reached at (613) 727-1779.

Apple strikes QuickTime deal with Netscape

■ Navigator 3.0 to offer full-motion video over the Internet

By Tom Quinlan

APPLE COMPUTER INC.'s aggressive efforts to transform itself into an Internet company have succeeded in landing QuickTime in the next release of Netscape Communications Corp.'s Navigator browser, but it's too soon to tell if Apple's leap into Web-based video will eventually pay off.

Netscape will include a QuickTime plug-in with Navigator 3.0, so users of the popular browser will have access to quasi-streaming video, with support for 30 frames per second and a 640-by-480 screen.

QuickTime's new capability to mimic streaming video's capabilities means users won't have to wait to download the entire file from the Internet before they start playing back the video, according to Larry Tesler, vice president of Apple's recently created Internet platforms division. The agreement between Apple and Netscape also means Internet users will have immediate access to the most popular computer-based video development tool in the industry, he added.

"The Web gives us a level playing field," Tesler said. "By making the operating system less important, there's a chance for superior technology to be adopted by a wider

group of users."

QuickTime currently supports full-motion, full-screen video only over T1 lines, which have a higher bandwidth than modems. Apple promised that later releases of QuickTime will improve the performance of QuickTime movies downloaded via a modem.

"This is an excellent end-world solution," said Kim Brown, a senior industry analyst with Dataquest Inc., a San Jose, Calif.-based market research company. "People are going to be downloading video at work, where they have access to the faster T1 lines. They're not going to be doing this at home."

By acting so quickly to cement a relationship with Netscape, Apple has also strengthened its leadership position in the video arena vis-a-vis Microsoft Corp.'s ActiveX-based ActiveMovie technology.

"Apple is still a year or two ahead of Microsoft in this technology," Brown said. "The agreement with Netscape means they can take advantage of that technology lead."

However, Apple has been unable to make its technology prowess in

the video field pay off in the past. Executives at Apple acknowledged that the company had tried previously to use technologies such as QuickTime to sell its hardware platforms, with qualified success at best.

Although Apple can claim that 70 percent of multimedia development is done using QuickTime, more than 70 percent of the content is being developed for Windows platforms.

Now, with Netscape's backing, some Apple executives saw an opportunity to begin making money on QuickTime itself.

Besides making the agreement with Netscape, Apple has recently signed agreements with a number of companies, including IBM and Silicon Graphics Inc., to port QuickTime's development environment to OS/2 and Irix, respectively. Those deals could bring Apple millions of dollars just for doing the development work.

QuickTime will not be Netscape's only video solution for the Internet. Marc Andreessen, executive vice president and chief technology officer, noted that the deal was nonexclusive and that Netscape would probably strike similar deals with other vendors in the future.

HEWLETT PACKARD

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FROM THE ETHER · BOB METCALFE

Future looks surprisingly bright for cross-platform, object-oriented Java

GIVE ME A. Give me an A. Give me a V. Give me another A. What's that spell? Java! So now I'm cheerleading for Java, from Sun Microsystems Inc., which until recently I underestimated as a standard interpreter for extending Web browsers. In November I was upbeat about Java but took care to distinguish it from Telescript, General Magic Inc.'s interpreted programming language for Internet agents. (See "Here comes Telescript again, and this time it's on the World Wide Web," Nov. 6, 1995, page 59.)

Well, much to my surprise, Java has blown Telescript away. I don't feel bad about underestimating Java because it surprised everybody else, including Sun. Insiders say Java survived two or three false starts before resonating with frustrated IS managers and developers. See http://www.sun.com.

I see now that Java is not just a language for small programs ("applets") to be downloaded and interpreted on various browsers, Java is also a language for small programs ("servlets") to be uploaded and interpreted on various servers. Java servlets will initially lack some powerful capabilities of Telescript agents — such as the GO instruction and resource permissions — but it's time to say: good-bye Telescript and hello Java.

Java is not just a language for applets and servlets. It burst onto the scene as a safe, cross-platform execution environment for Web browser applets, and to that use the Java Virtual Machine is restricted for safety — to protect your machine from damage due to bugs or viruses. But outside the browser, Java is a full-blown programming language. Experts I trust say that Java could eventually displace C and C++. Java is becoming what C++ should have been: object-oriented, yes, but not so complicated and backward-compatible with all the warts and dangers of C.

If Java is ever to replace C and C++, it cannot remain an interpreted language. So Java users have now been promised all the modern programming tools, and compilers in particular. Coming soon are so-called just-in-time compilers that increase Java's speed 10 times.

Neither is Java just software. Sun is working on hardware for the performance-sensitive activities of the Java Virtual Machine. Sun hopes to sell Java hardware widely.

Java is not just a language and chips. The Java Virtual Machine comes with object classes that make it an "operating environment." Without such an environment, C++ offers limited compile-time portability, not Java's dependable cross-platform interoperability.

Java's environment promises vast improvements in software administration. This explains the surprising interest in Java by *Info-World* readers. What's more, developers find Java appealing, especially smaller ones with limited resources for cross-platform development and shrink-wrap distribution.

Neither is Java just an operating environment to be hosted on your current platforms. Just as Windows was initially called an operating environment, Java will prove an important new operating system to run directly on new, especially non-Wintel, platforms. Java

stations will make great Internet terminals, replacing the last 3270s for starters. Someone has already written a 3270 emulator in Java.

I urge you to demand a good story from your computer and software vendors about Java. One software vendor with whom you should be especially demanding is Microsoft. To its credit, Microsoft has licensed Java and agreed to ship it in Windows. Microsoft should pursue Java with everything it has and try to beat Sun at its own game — everyone would benefit. Microsoft should not fall back on saying that Java is, if you insist, just another programming language, not quite as good as Basic, for programming Web applets. Microsoft should not be allowed to try using its Windows monopoly to kill Java.

A suggestion for speeding things along might be for Sun to give comfort to competitors by spinning off its new Java unit. Just think of the valuation Java would attract in the bizarre stock market that now exists for Internet public offerings. What should they call it? Javascape?

Bob Metcalfe invented Ethernet in 1973 and founded 3Com Corp. in 1979. He receives e-mail at bob_metcalfe@infoworld.com via the Internet.

Intranets hit center stage at show
▪ Slew of products introduced at spring Internet World

By Kristi Essick

THE SPRING Internet World trade show last month set the stage for scores of new software and hardware products aimed at the market for corporate intranets.

Performance Technology Inc. announced the release of Instant Internet 3.1, a LAN-to-Internet connectivity server. It offers support for ISDN; a 32-bit WinSock connection that enables Windows 95 users to run Java applications and also offers newsgroup filtering capabilities; and automatic importation of Novell Directory Services databases. The product acts as an IP-to-IPX gateway and lets users set up an intranet or Internet service on an existing LAN. Priced at $4,195, it is due in mid-June. Performance, based in San Antonio, Texas, can be reached at http://www.perftech .com or (800) 784-4638.

Process Software Corp. released a suite of intranet development tools called the Purveyor IntraKit, designed to let developers export files and databases from an existing LAN to intranets. The product is available now; pricing depends on the number of users. Process, in Framingham, Mass., is at (800) 722-

7770, (508) 879-6994, or http:// www.process.com.

Allaire Corp. will begin selling a $795 intranet product bundle that consists of an updated version of Cold Fusion Professional 1.5 for database Web application development and the new Allaire Forums Enterprise for Web conferencing. The package will enable developers to incorporate existing ODBC-compliant databases into a corporate intranet. It is available now. Allaire, based in Minneapolis, is at http://www.allaire.com or (612) 830-1090.

W4Exchange, a system option for the Wildcat 5 Web server from Mustang Software Inc., now works with Microsoft Exchange to allow any remote messaging, including e-mail and newsgroups, to be funneled into Exchange's Inbox, according to Mustang's announcement. W4-Exchange is priced at $499 and is available now. Mustang, based in Bakersfield, Calif., is at http://www .mustang.com or (805) 873-2500.

Distinct Corp. announced the release of NetRover, a software package from its Intranet Suite of products that will allow users to transfer files between two remote systems.

The $99 package includes Distinct Email/Noves with support for Multi-purpose Internet Mail Extensions attachments and an FTP (File Transfer Protocol) client allowing multiple connections for file transfer. Availability has not been set. Distinct, based in Saratoga, Calif., is at http://www.distinct.com or (408) 366-8933.

SoftQuad Inc. announced Version 3.0 of its HTML authoring software, HotMetal Pro for Windows, which will incorporate WYSIWYG forms for adding images, drag-and-drop editing, graphical tables and frames, and support for Shockwave, Java, and ActiveX applications. HotMetal Pro, priced at $159 and due this month, is designed for users who want to create Web sites or corporate intranets without having to learn HTML. SoftQuad also announced that its HotMetal Lite authoring tool will be bundled with Novell Inc.'s new InnerWeb Publisher server for intranets. SoftQuad, based in Toronto, is at http://www.sq.com/ or (416) 239-4801.

Kristi Essick is a U.S. correspondent for the IDG News Service.

IBM, HP preview 'net products aimed at on-line commerce

By Yvonne L. Lee

SEVERAL NEW products demonstrated at spring Internet World will help organizations begin commercial transactions over the 'net.

The products encrypt credit card and financial information traveling across the network, secure information on servers, verify user identities, and confirm that a user has the funds to make a purchase.

IBM demonstrated its Net Commerce service, a group of products and services used to create end-to-end "storefronts," which also includes market research gathering tools. The secure payments portion will enable merchants and customers to send certificates to a third-party authorization system to verify identities using the Secure Electronic Transaction protocol. The payments portion is not scheduled to ship until the fourth quarter. Versions of Net Commerce without the secure payments portion are available now on AIX and Windows NT. Solaris and OS/2 versions are due later this year.

Hewlett-Packard Co. demonstrated on-line banking and electronic catalogs based on its HP-

UX 10.09 Compartmented Mode Workstation (CMW) "trusted" operating system. The operating system enables confidential and public information to be placed on the same server and does not allow users to access the file system or even operating system commands, said Jan Silverman, director of HP's Internet Solutions Group.

HP-UX 10.09 CMW is due in December. A version of Praesidium Authentication Server, expanded to grant permissions on the Internet, as well as corporate intranets, is due at about the same time, Silverman said. The combination would enable administrators to limit the commands available to users.

HP is working with Informix Software Inc. and GemPlus Card International Corp. to enable much of the authorization to be built into smart cards.

Other products demonstrated that enable sales on the Web included software that does credit card authorizations from a Web page, launched by Oakland, Calif.-based CyberCash Inc.; and CheckFree Services Corp.'s tools that help banks to create Web sites.

TO THE BOARDS

What's an intranet for, if not to facilitate communication within your company? But if you've built your intranet around Web technology, you may find it's not so easy to get everybody talking. HTML and HTTP support two-way communication only reluctantly.

This week, we look at two products aimed at making your webs — both private and public — more interactive. WebBoard, from O'Reilly & Associates Inc. generates threaded message boards encoded in HTML, so any browser can access them — with no plug-ins or helper applications required. Another approach to the intranet conferencing problem comes from NetManage. Its IntraNet Server centers on a Network News Transport Protocol server — the same type of server used for Usenet newsgroups. The idea is promising: Newsgroup discussions are threaded, access is easy to control, and news-group readers are already built in to most Web browsers. But does NetManage deliver? Turn to page IW/5.

HOW WE REVIEW

InfoWorld Product Reviews examine new products, focusing on their usability, features, and suitability to task. Our expert reviewers rate shipping products only on a scale from cold to hot. The authors do not employ the extensive analyses used in Product Comparisons, so their conclusions may be different.

TALK BACK

We welcome your comments on this section and the products we evaluate. Please send your questions, comments, or kudos to the reviews editor at deri_kommer@InfoworId.com. Please include "Talk Back" on the subject line.

> NT secure Web server

Esplanade stands out on NT

By Mike Heck With Windows NT Web server packages available for free, how can you justify the purchase of such software? The answer is found in applications such as FTP Software Inc.'s Esplanade Secure Web Server 1.2, which performs much more than

mere Web site hosting.

Anyone who has some experience using Windows NT can load Esplanade from a CD-ROM by following simple prompts. It took me about 15 minutes to install the software. Unlike Netscape Communication Corp.'s Commerce Server, which lets you manage the software remotely using a browser, a change to Esplanade's operation must be made from the server PC. But to get going, you only need to complete a few fields on one of the tabbed dialog pages. The software automatically captures data such as IP address and server name.

If you want secure operations, a separate configuration page appears for Secure Sockets Layer (SSL). Using this page, you can create a certificate request and send it to a certificate authority, such as VeriSign Inc. on-line Certificate Authority (A digital identification from VeriSign costs $290 for the first year and $75 per year thereafter.) Installing the returned certificate enables secure transactions using a public and private key pair. Esplanade comes with an SSL-compatible Mosaic browser, but it also works with Netscape Navigator 2.01.

Beyond this fairly standard fare, Esplanade offers two uncommon features. First, the software converts word processing documents stored on the server to any of more than 30 different formats when a browser requests the document. It translates them using KeyPak, FTP Software's bundled text conversion utility.

The whole translation process is very transparent and only requires a few simple lines of HTML code. For example, I had an internal phone directory stored in Microsoft

Corp.'s Microsoft Word format that was converted to HTML on the fly. In addition to handling word-processing-to-HTML exchanges, KeyPak converts from one word processing format to another. The conversion function saves time and

ESPLANADE'S DATABASE CONNECTOR *lets you create Web database applications with relatively little work by combining several forms.*

space, because you only need to store and update one copy of each file.

The second uncommon feature, Database Connector, merges database information with Web pages. This feature let me create a Web database front end without requiring a fat client-side program.

Database Connector works with any database that has a 32-bit ODBC driver for Windows NT, such as those from Sybase Inc. and Oracle Corp.; IBM's DB2; and Microsoft's Excel, Access, and SQL Server. In essence, an Esplanade Common Gateway Interface (CGI) program calls the connection manager, which queries a database. The CGI program then passes the results, formatted as an HTML page, back to the Web browser.

To set up this process I had to complete several tasks, including building queries, editing an HTML query file (page sent to the browser so a user can make a query), and customizing SQL statements. It involves a few more steps than the setup of a similar process using Macromedia Inc.'s Backstage Desktop Studio. (See Intranet, April 15, page 1/2.) Nevertheless it wasn't difficult to build my database Web application, because I did almost everything using dialog boxes and tables.

Esplanade's easy-to-set up Web Reporter generated several types of reports from the server's log file. The data I collected included how often a page had been accessed, which browsers were used to connect to the site, and how often a file had been downloaded.

Esplanade is a complete Web server. It handles CGI and WinCGI applications written in Perl, Visual Basic, TCL and C or C++. I was able to successfully employ other stan-

dard functions within my pages, such as image-mapped graphics. The server also provides a high degree of configuration flexibility. I added password protection to individual files and directories and the changes were applied without restarting the server.

Esplanade's uncommon features set it above other Windows NT servers, because it allows you to easily move existing files and data into an intranet or Internet setting with a high degree of security.

THE BOTTOM LINE

Esplanade Secure Web Server 1.2

Designed primarily for corporate intranets, Esplanade justifies its price with comprehensive capabilities and dynamic document conversion.

Pros: Secure Sockets Layer to protect Web transactions; dynamic conversion of more than 30 document types to HTML; Database Connector program to let users interact with ODBC databases using Web clients; graphical administration and activity reporting tools; exceptional technical support.

Cons: No remote or browser-based administration capability.

FTP Software Inc., Andover, Mass.; (800) 282-4387, (508) 684-3300; info@ftp.com; http://www.ftp.com.

Price: $399; competitive upgrade: $195.

Platform: Windows NT 3.51.

QUICK BYTES

Connect to the Internet on the cheap

USE INTERNET CONNECTION

Mach2 Internet Server 1.0

Seems like everyone's got a way for you to connect to the Internet these days. With the Mach2 Internet server from Infinite Technologies, you will even be able to use that cranky old DOS PC. The Mach2 server, which is slated to ship by June, is a high performance, software-only router. With it, a lowly 386 can handle as many as 100 concurrent

Internet client sessions.

To act as a router, the host machine running the Mach2 server must have a network interface card to connect to the network and a modem to connect to an Internet service provider.

The Mach2 server is the first in a series of modular plug-and-play Internet connection services from Infinite Technologies. Mach2 Post Office Protocol 3 services, providing server and client pieces for managing incoming Internet

e-mail, will ship next. The Mach2 SMTP server will handle the outgoing portion of Internet e-mail.

If you're looking for an economical way to get connected and a software-based solution is appealing, then the Mach2 Internet Server may be just what you need.

Infinite Technologies, Owings Mills, Md.; (800) 678-1097, (410) 363-1097; fax: (410) 363-3779; http://www.iisah.com. Price not yet determined.

— *Paul Ferrill*

► Multimedia presentation tool

Totally Rad: Web tool flashy, functional

By Serg Koren

R ADMEDIA INC.'s PowerMedia 2.0 is presentation software for the Internet. Other presentation packages are available, such as Microsoft Corp.'s PowerPoint or Aldus Corp.'s Persuasion, but none let you create interactive, multimedia presentations that are directly viewable on the Internet. PowerMedia, available now, attempts to do that and much more.

PowerMedia lets you incorporate multimedia, including sound, animation, active links, and even Java applets, into your presentations. Presentations can be viewed using the built-in viewer or with a plug-in embedded within a Web browser such as Netscape Communications Corp.'s Navigator. The same PowerMedia presentation can also run on multiple platforms — from Windows 3.1 and Windows 95 to Unix.

The metaphor PowerMedia uses for presentations is some building. A scene is a visual display that can be linked to other scenes, both locally and on the Internet. This allows you to incorporate items you find on the Internet within your own presentations.

Several scenes make up a story line. Like the outline mode in many presentation packages, PowerMedia's story line view lets you organize scenes by topics. Other similarities to slide-based presentation packages exist: You can view all of a story line's scenes in a "slide organizer" mode, and you can order individual scenes one by one.

PowerMedia imports a large number of multimedia formats, and source files can originate locally or from the World Wide Web. Individual elements can be easily posi-

tioned and sized. You can define links between objects as well as transition effects, such as wipes and burn-downs, and set timings between display changes.

One nice feature of PowerMedia is the ability to open a Web address as if it were a folder, so that links and embedded graphics show up as files that you can import into your own presentations. There is also an option that allows you to export a presentation as HTML. This creates a folder containing all the elements and links, which you can then upload to your Web site.

RadMedia's PowerMedia package is billed as "enterprise-ready multimedia authoring and delivery software." Unfortunately, I can't agree with the term enterprise-ready. In the beta version I tested, there was no simple way to convert existing PowerPoint or Per-

suasion presentations. Companies could and should be able to leverage existing presentations, instead of having to redo or redesign them all from scratch.

Luckily, RadMedia is promising that the official release of PowerMedia will include an import utility that will allow you to convert your legacy presentations.

The beta version I tested had outright bugs and caused problems on my system. The Getting Started manual was poorly organized and confusing. There was no glossary of new terms. In addition, the on-line tutorial did not work properly. I spent a fair amount of time on the phone with RadMedia's support personnel, who were both

helpful and responsive.

Despite these problems, PowerMedia does work. There will be many uses for PowerMedia, from sales presentations and interactive manuals to kiosk presentations.

If you're looking for a powerful Internet authoring tool and are in a rush, or if you don't want to deal with the limitations of HTML, take a look at the beta version of PowerMedia, available on the RadMedia Web site. Otherwise, wait for the official release, which should have some much-needed fixes.

Serg Koren is an advisory analyst at Tandem Computers Inc., in Philadelphia. His Internet address is sckoren@netnexus.com.

THE BOTTOM LINE

PowerMedia 2.0

PowerMedia is a feature-rich multimedia authoring tool for Web publishers that doesn't require programming savvy.

Pros: Many tools and options; creates HTML; can be cross-loaded alone or on the World Wide Web.

Cons: Buggy beta software; poorly written documentation; complicated interface.

RadMedia Inc., Palo Alto, Calif.; (415) 617-9430; info@radmedia.com; http://www.radmedia.com.

Price: $495 list price, available now.

Platforms: Windows 95, Windows NT, Sun Solaris, HP-UX, Silicon Graphics' Iris, IBM AIX. Windows 3.x and Macintosh versions due soon.

► Web page authoring tool

Internet Creator builds sites one paragraph at a time

■ No need to master HTML; tool enables on-line commerce

By Gess Shankar

I F YOU THINK "tag" has something to do with your luggage or your dog, then Forman Interactive Corp.'s Internet Creator 3.02 may be the Web authoring tool for you. It lets you create a complete business Web site without looking at a single line of HTML.

Internet Creator is neither an HTML editor nor a WYSIWYG page maker such as Microsoft Corp.'s FrontPage or NaviSoft Inc.'s NaviPress. It works more like a rapid application development tool. You create a new Web site by first creating the index page. The program takes you through a series of setup dialogs and a home page wizard that sets up a basic start-up page, describing your company, its history, and contact information.

Once the start-up page is created, you are presented with a development screen that resembles the Windows File Manager, with two rows of command buttons and two main windows. Icons arranged hierarchically in these windows represent the site's pages and the paragraphs they contain.

Using the toolbar, you can add new paragraphs and customize them with specialized wizards. When all the desired elements have been added, Internet Creator generates HTML code for the entire site, and you can test it using Netscape Communications Corp.'s Navigator or a similar browser.

Internet Creator is a Windows 3.1 program, but I was able to run it without problems under both Windows 95 and Windows NT. Forman is also planning to release a 32-bit Windows version soon. Internet Creator includes several sample

sites and many graphics objects such as icons and backgrounds for quick customization. A self-roaming tutorial demonstrates the major features of the program and how and when to use them.

Although this is enough to get novice users started, it would have been more useful if this tutorial had included shots of how the actual

INTERNET CREATOR *presents a hierarchical view of your Web site and page elements.*

page looks after each step.

Once you have created a new site by defining the home page, Internet Creator's main screen presents two simultaneous views of the site. You can select objects and drag them from one location to another.

Most standard HTML paragraph styles, such as text, lists, links to other sites, and images, are supported. Adding a new paragraph is merely a matter of clicking on the appropriate button and answering the dialogs presented by the wizard. On completion, the new paragraph's icon and description are inserted in the page hierarchy.

One particular paragraph style, called "transactional item," allows you to create a structured on-line catalog that includes numerous

items and details such as prices, part numbers, volume discounts, and shipping charges.

You can also add custom criteria. For example, I created some T-shirt items and user-defined categories for size, color, and material. When Internet Creator generated the site, it added a search button to let users query this catalog based on a keyword or item-related criteria including size.

Internet Creator also includes an option to create an interactive shopping basket, which allows the user to select items, build an order, and complete a transaction via unsecured e-mail or with the help of a secure electronic transaction hosting service. (One such service is currently provided by Forman.)

In less than half an hour, I was able to set up an e-mail-based ordering system without creating any forms and without writing any HTML or Common Gateway Interface code.

Another great feature of Internet Creator is its table wizard. This tool provides a remarkably easy way to create attractive tables— an otherwise troublesome chore.

One glaring omission, however, is the lack of a wizard for creating forms. Some forms are automatically generated by the wizards for handling e-mail and purchase transactions, but there is no way of creating your own forms. It is possible, however, to embed forms and other HTML pages created outside Internet Creator.

The most difficult aspect of using Internet Creator is not knowing what the page is going to look like until you complete all the steps and generate the HTML code. Even after it has been generated, there is no single button to launch the browser from within Internet Creator. The built-in viewer is limited in its formatting capability.

According to Forman representatives, the next version of Internet Creator will include a WYSIWYG page editor.

Internet Creator can't handle cool tools such as JavaScript and Frames, but if you need to put your company and its products on the World Wide Web — and you have a small budget — Internet Creator will get you there quickly.

Gess Shankar is an electronic publishing and Web consultant and an author. His Internet address is gess@earthchannel.com.

THE BOTTOM LINE

Internet Creator 3.02

Designed primarily to create complete business Web sites, Internet Creator lets you construct pages based on predetermined templates, which you can customize using wizards.

Pros: No HTML knowledge needed; creates and maintains complete Web sites; includes electronic commerce capabilities; excellent table builder; FTP (File Transfer Protocol) utility to automatically upload the site to a remote host.

Cons: Page editor not WYSIWYG; no forms capability; custom code can be added but cannot be maintained within Internet Creator.

Forman Interactive Corp., Brooklyn, N.Y.; (718) 522-2260; fax (718) 522-0257; http://www.forman.com/; http://www.forman.com/.

Price: $189 suggested retail price; $149 estimated street price.

Platforms: Windows 3.1.

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▶ Web-based conferencing software

WebBoard builds powerful on-line forums effortlessly

By Kelly Conatser

O REILLY & ASSOCIATES Inc.'s WebBoard 1.0 is a new publishing tool that makes it easy for anyone with a Common Gateway Interface-compliant server to create a variety of browsable Web services. WebBoard enhances the traditional bulletin board by allowing users to incorporate HTML tags, which can include links to other Web sites, in their messages.

In addition, the discussion forums that you create (which Web-Board calls Conferences) can be designated as read-only or private. Conferences in the latter category are restricted to users that the conferencoe moderator or WebBoard administrator selects, and such conferences are invisible to those not on the list. You can also establish moderated conferences, in which the administrator or a moderator screens each message before it is posted. This makes WebBoard a viable intranet alternative to more sophisticated groupware products.

After users log on to WebBoard, they can select from the available conferences and then select a topic (or thread) within that conference. Users can follow the thread forward or backward and post a public reply

(including HTML formatting) to any message. It's also possible to step outside the conference and send private e-mail to a particular message creator. Anyone with more

WebBoard 1.0

WebBoard is a Web-based messaging system that allows site administrators to create read-only message boards or interactive discussion forums.

Pros: Provides forums, either public or private, that are ideal for small groups collaborating on an intranet; allows as many as 255 independent forums within a single site, using a system of virtual boards; easy for administrators and users to set up and learn.

Cons: User log-on not foolproof; needs a more detailed system for classifying users; needs access privileges to conferences to simplify site management.

O'Reilly & Associates Inc., Sebastopol, Calif.; (800) 998-9938, (707) 829-0515; fax: (707) 829-0104; http://website.ora.com.

Price: $149

Platforms: Windows 95, Windows NT.

than read-only status can also create new topics within a conference.

A single copy of WebBoard can accommodate as many as 255 virtual boards, each with its own set of conferences. Although users must log on separately to each board, the boards share a common user database, sporing an active user the trouble of reregistering for each board. Troublesome or inactive users can easily be bounced from the database, effectively removing their access to all virtual boards.

Although it seems complex, this hierarchy of virtual boards, conferences, topics, and messages is really quite simple to set up and navigate, and several small features help give the product an effortless feel. Users can scan unread messages, mark all messages as read, find out who has logged on to a conference that day, check the profiles of other users, and search one or more conferences for specific text strings. Administrators have access to a detailed activity log and a control panel that displays a thumbnail sketch of the most recent user's transactions and can limit the number of messages stored for a conference in the interest of conserving disk space.

But with so many conferences and virtual Web boards available,

WEBBOARD's menu gives users access to conferences or utilities.

administrators with an active Web-Board site might find themselves wishing for a few more tools to regulate users' interactions with the site. The administrator can specify that all new users are automatically registered as guests with read-only status, but there's no easy way for guests to apply for full user privileges. In addition, guests can browse any conference that's not marked as private. The program would benefit from a more sophisticated method of categorizing users, guests, and conferences.

WebBoard also suffers from a few minor design flaws. When a new

user logs on, the option to track unread messages is turned off by default, and a new user could easily believe that there were no unread messages when in fact there were several. The initial log-on process itself can be trying if the new user doesn't fill in all the required data fields (such as name and city), because the system's generic error message gives no clue as to the source of the problem.

Although it is well-written and informative, the documentation is poorly indexed, and the on-line help is rather sparse. For example, it isn't immediately evident how to set up a new topic within a conference, and it's a challenge to ferret out information on this important function.

But in other areas WebBoard rates so highly for ease of use, from the standpoint of both administrators and users, that these problems are relatively easy to overlook.

Overall, WebBoard will meet or exceed most nonprogrammers' expectations by letting them create a well-organized, low-maintenance Web presence in short order.

Kelly Conatser is an independent consultant and author who lives in Kennet, La. His Internet address is kelly_conatser@infoworld.com.

▶ Intranet server suite

IntraNet Server promises much but delivers little

By David Strom

I F YOU LIKE the idea of setting up your own intranet but don't want to run Unix, you might be tempted to consider NetManage Inc.'s IntraNet Server for Windows NT 5.1. But don't be too hasty: Although it has some promise, the IntraNet Server is a confusing morass of half-finished software that is more of a construction kit than a full-featured product. And although NetManage gets points for including a lot of different things, the level of integration among these tools is almost nil.

The idea of an NT-based intranet server that does more than just provide Web pages is a good one, and NetManage is definitely going in the right direction with this package. However, it hasn't reached the destination yet. You'll do better sticking with Unix for now.

IntraNet Server comes with a bushel basket full of seven different

servers. The two most significant ones are the Web server and the Network News Transfer Protocol (NNTP) server. Also included are a directory server, a Domain Name System server, a network file system (NFS) server (including NFS printing services), a NetTime server, and a Line Printer Daemon server. It sounds like a list of Unix services, and it is — with one very notable exception: Post Office Protocol e-mail is missing from this package.

The NNTP and Web servers are easy to set up and get going, but they're a major pain to configure and maintain. You have to master plain-text configuration files, Registry keys, and NT Services in the Control Panel, as well as command-line options for several executable programs. Keeping track of which tools control which function is tedious. The servers can't be configured with Windows GUI tools.

The NNTP server is supposed to

be the product's centerpiece, and it did work satisfactorily, once I edited its configuration file (using Notepad). You have to master the news server's command syntax, which I felt enhanced the Unix-like feel of the product — not necessarily a good thing.

The Web server included is rather minimalist. This server includes two separate programs, one that runs as an NT service and one that runs as an application. This means that if you are running the Web service and you need to administer the server, you'll first have to stop the service and then run the executable server. You can administer the server from anything other than as own local console. And even then, your access to administration settings is limited.

What really got my goat was this line from the manual: "Certain Web server settings are not yet available

via configuration dialogs, and must be set manually in the Windows Registry." I'm sorry, but anything that tells me to edit my registry to perform important and common tasks isn't my kind of software.

I tested the IntraNet Server on a 50-MHz 486 running Windows NT Server 3.5.1 with 32MB of RAM, the bare minimum configuration I'd recommend for this product. I was able to connect to the IntraNet Server's Web and news services from Windows 95, Windows NT, and Macintosh clients running Netscape Communications Corp.'s Navigator, and I successfully read and posted news articles using Newswatcher on the Macintosh.

IntraNet Server has potential to become a very valuable product, if NetManage does its homework and puts together a more finished and integrated suite with a graphical interface.

But in the meantime, you are bet-

IntraNet Server for Windows NT 5.1

NetManage's IntraNet Server is a grab bag of seven different services, including Web, Network News Transfer Protocol, and network file-system servers. However, it is difficult to manage given the lack of any graphical interface.

Pros: Services that are simple to set up and get running.

Cons: Difficult server configuration that requires lots of patience; little integration among the various services; poor user interface.

NetManage Inc., Cupertino, Calif.; (408) 973-7171; fax: (408) 973-8272; sales@netmanage.com; http://www.netmanage.com.

Price: $495 until June 30, then $695.

Platforms: Windows NT 3.5.1 Server or Workstation, Intel only.

ter off looking to Unix to deliver the full suite of applications. Or if you simply need an NT-based news server, try out SoftArc Inc.'s First-Class or Attachmate Corp.'s Open-Mind.

INSIDE THE FIREWALL · DAVE TAYLOR

Responsible users require your trust, not an overseer

THE INTERNET WORLD trade show earlier this month brought out a mind-numbing array of product and service announcements, but this time I want to talk about a class of products at the show that is best represented by NetPartners Internet Solutions Inc.'s WebSense. (Read about it on-line at http://www.netpart.com/.) It's an Internet screening and monitoring system "for corporate users," and what it represents is proof of the breakdown of effective communication, professional work ethics, and management in this country. In a nutshell, if your company needs this product, what you really need is to replace some key members of your staff instead.

There are two parts to WebSense: monitoring and active validation; and acceptance or denial of Internet connections. The program functions as a sort of software firewall.

Operating at the server level, WebSense can actually prevent employees from visiting any of a wide set of sites deemed inappropriate by management. The technology is simple: Hosts are compared with The List of Bad Sites (distributed by subscription only) and, if matched, "access denied" appears on screen.

That part is acceptable, with some caveats, but the troubling side of WebSense is that it also monitors and logs all user activities, sending neat monthly reports to managers of not only where users spent their time on the Web and how long they were at those sites, but where they tried to visit and couldn't. It's a whole new version of thought control, and it's being touted as a solution to what's presumed to be an insidious problem.

The difficulty is that it just can't work, and even if it could, it's absolutely the wrong solution to a serious problem in the workplace.

One of the characteristics of our workplace today is that it's hectic, with lots of activity, a variety of people streaming through the office, and constant interruptions and off-task activities. Imagine now that you're wandering the Web looking for some reference material and the Sports Illustrated Swimsuit Home Page catches your eye while you're perusing an Alta Vista search result. You click on the page and before it even loads on-screen, your colleague pops her head in and says, "We're late for the budget meeting. Let's go!" Three hours of tedious meeting later you're back and, seeing the page on-screen, you immediately bookmark it and go back to your original task.

Later that month your boss gets a report from WebSense that shows you spent 3 hours exploring the Sports Illustrated site, 3 hours of work time for which you were already paid.

Whether or not the nuts and bolts of this scenario are likely, the point is that covert monitoring of employee behavior is inappropriate and masks more serious employee/manager problems.

As a manager, I just can't imagine how tracking on-line usage could ever be relevant. I hire the best available; whether they "explore" or not, they're still held to their deadlines, so they can manage their own time as they desire.

It's a responsibility and professionalism issue. I believe that the vast majority of corporate employees in this country are conscientious workers who, if they were managed as part of the team rather than as cattle, would be more productive and efficient.

What do you think? Am I out on a limb suggesting that WebSense is unnecessary in well-managed organizations, and that monitoring and site-blocking are just lazy ways to avoid dealing with real issues of employee empowerment, reliability, and professionalism?

Dave Taylor is president of Intuitive Systems, an interface design company. Visit him on-line at http://www.intuitive.com/ or send e-mail to taylor@intuitive.com.

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smart business decisions. And writing
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tions for a computer named Macintosh."

SHIPPING

Enterprise Solutions Ltd. is now shipping EMX Forum, a collaborative tool enabling discussion groups and real-time chat sessions on the desktop. The product is available on Windows 3.1 and Windows NT platforms and is compatible with all standard X.400 mail systems, including EMX Mail, as well as with proprietary systems such as Microsoft Corp.'s Exchange and Lotus Development Corp.'s Notes. EMX Forum is shipping as a stand-alone product for $40 per user. (805) 449-4181.

SIREN SOFTWARE CORP. will ship this month Siren Fax 3.0 for Windows NT and Macintosh systems. Support for Windows 95 will come next month. The product runs on Unix servers and also supports clients on Windows 3.1 and X Windows/Motif. Siren Fax allows users to send and receive faxes via a shared group of modems. Users can create cover sheets for the faxes they send. Siren Fax can also protect the confidentiality of incoming faxes via support for Direct Inward Dialing. The new version is priced at $100 per user. (800) 457-4736.

ANNOUNCED

AMP INC., a fiber-optic company, is announcing a set of services and software offerings that will allow IT managers to consolidate campus wiring closets into a single logical and physical space. The Centralized Network Architecture is a fiber-optic system that the company developed in cooperation with network device vendors such as Cisco Systems Inc. and Bay Networks Inc. Pricing has not been set. (717) 564-0100.

COMDISCO INC. has announced a new version of its asset management software. Class 4.3, shipping this month, is integrated with Microsoft's Systems Management Server. Its asset management repository also supports Sybase Inc.'s Sybase 10 databases. Pricing will be set this month. (847) 698-3000.

Bay launches low-cost switch

▪ Drop in Ethernet switch price to help port more users

By Stephen Lawson

BAY NETWORKS INC. is expanding its Fast Ethernet-based and Asynchronous Transfer Mode (ATM)-based switch offerings with the launch of a low-cost Ethernet switch and modules for its 58000 and Centillion 100 products.

The 28200 FastFrame switch, shipping now for $521 per port, is designed to provide desktop and segment switching at a low entry cost. The four-slot chassis can be equipped with modules for both wire- and fiber-based Ethernet and Fast Ethernet. A dual-slot FDDI module is scheduled for release in the third quarter.

The switch comes with Bay Networks' FastFrame nonblocking 2Gbps switching fabric. When a 400Mbps cascade port becomes available in the third quarter, users will be able to cascade as many as seven of the boxes with a high-speed connection between them.

John Dubiel, planning and technology manager at Boston Edison Co., is using Bay Networks' 28115 for segment switching and welcomes the new switch model.

"The cost is really the key thing," Dubiel said. "The 28200 will let us bring it down a level and give ports to individual users."

Meanwhile, Bay Networks is readying ATM modules for its Centillion 100 that will allow network managers to use it as a backbone switch. The four-port ATM/speed MCP module will let Centillion 100 become a 24-port ATM backbone switch that takes advantage of the 3.2Gbps ATM backplane that is already built in to the chassis, officials said.

Also next week, the Centillion 100 will get its first Fast Ethernet module. The 10/100 EtherSpeed module offers two 100Base-TX ports as well as eight 10Base-T ports.

The company will also announce this week an FDDI module for its 58000 switch.

Bay Networks, in Billerica, Mass., is at (508) 670-8888.

Bay Networks follows two paths
Product announcements by Bay Networks Inc. last week advanced two switching lines:

Product	Availability	Price
FastFrame technology (Fast Ethernet-based)		
28200 Modular Ethernet Switch	Now	$2,995 (chassis)
58000 Switch FDDI module	July	$9,995
Centillion technology (ATM-based)		
Centillion 100 EtherSpeed 10/100 Switching Module	July	$6,995
Centillion 100 ATMSpeed/155 MCP Module	June	$12,995
Centillion 100 ATMSpeed/155 Switching Module	July	$8,995
LAN emulation software upgrades	August	Free

End-stations to get boost with shared switch

By Stephen Lawson

NETWORK MANAGERS in small- and medium-size offices who want the speed of switching and the simplicity of a shared Ethernet hub may find the answer in a product due in July from Compex Inc.

The FreedomSwitch is a four-segment 10Base-T switch with 24 "floating" ports integrated into the same device. Through a capability called Automatic Dynamic Load Balancing, as many as 24 end-stations can share the 40Mbps bandwidth of the switched segments. An optional single-port 100 VG-AnyLAN module is available.

The FreedomSwitch monitors current usage on each segment and moves ports from segment to segment, at user-defined intervals as short as 15 minutes, to maintain optimal performance. The device uses SNMP and remote-monitoring data, as well as a Compex algorithm, to perform the load balancing. The switching intelligence is stored in flash memory so that upgrades can be easily downloaded.

Managers can monitor performance of the whole network using FreedomView Pro, a graphical Windows-based SNMP application.

Compex officials said end-stations that usually communicate with each other, such as a server and a pair of workstations, will ordinarily be assigned to the same segment. In this configuration, latency is lower than it would be in a true 24-port switch because packets between those ports do not have to be switched. But depending on the level of traffic, any port can be assigned to any segment.

At offices without a network manager, users can set up and maintain the device easily, officials said. If the network grows beyond 24 devices, users can attach repeaters to the ports and traffic from the repeater will be load-balanced.

FreedomSwitches can also be stacked using the 100VG-AnyLAN module for backbone connections, but loads will only be balanced within each switch. The switch will cost $1,999, or about $83 per port.

Compex, in Anaheim, Calif., can be reached at (714) 630-7302.

Desktop video prices to drop

PICTURETEL CORP. WILL lower the price tag for desktop videoconferencing when it introduces a package priced at less than $1,500.

The Live200p desktop videoconferencing software is a PCI version of the $1,995 Live200b, which the company introduced last October. It is available now for $1,495.

Although it supports higher end systems than the ISA- and EISA-based Live200b, the Live200p costs less because it does not have a built-in graphics controller.

Like the Live200b, the Live200p supports the H.320 standard for videoconferencing across ISDN.

Prism, the company's new multipoint videoconferencing bridge server, lets users connect as many as four desktop or room videoconferencing sites and see each site simultaneously. It also can be used as a bridge for multiple users with ISDN Basic Rate Interface connections to dial out through a shared T1 or ISDN Primary Rate connection.

Prism is due at the end of this month; prices start at $19,990.

PictureTel, in Danvers, Mass., can be reached at (800) 716-6000.

— Yvonne L. Lee

3COM UNVEILS A SINGLE SOLUTION FOR VIRTUAL LANS

By Stephen Lawson

AN INTEGRATED remote-access server and LAN/WAN switch introduced last week by 3Com Corp. will allow network managers to set up virtual LANs over WANs.

3Com is positioning the AccessBuilder 5000 as a one-box solution for integrating remote users into large enterprise networks. The 17-slot chassis combines multiple LAN segments with WAN media modules for asynchronous modems, ISDN Primary Rate Interface, and T1/E1 connections. It can see as many as 16 Ethernet or Token Ring segments and 256 WAN ports.

In addition, the AccessBuilder 5000 will be among the first products to support the Point to Point Tunneling Protocol (PPTP) developed by 3Com with Microsoft Corp. PPTP allows managers to build remote-access links by tunneling packets across the Internet.

Joe Skorupa, director of marketing for the Primary Access Division, said the 5000 expands 3Com's Transcend Virtual Networking strategy to the WAN, allowing easy adds,

ACCESSBUILDER 5000 accommodates 17 modules for high-capacity remote access to a central office.

moves, and changes even at remote sites. Networks built around the 5000 can be managed from end to end by 3Com's Transcend network management platform.

The product is shipping now. A base system with 48 asynchronous ports is priced starting at $24,995 for Ethernet and $29,995 for Token Ring networks.

3Com, in Santa Clara, Calif., can be reached at (408) 764-5000.

Small international players showcase WAN services

By Jessica Davis

AS THE BIG long-distance phone companies enter the battle for control of the wide area network data business, smaller players are also expanding their services.

Both Infonet Services Corp. and Scitor International Communications Services Inc. showcased WAN services at the Electronic Messaging Association show in Anaheim, Calif., at the end of April.

Infonet announced it would support Lotus Notes and Novell GroupWise in its Global Notice Server messaging service, which already supports Microsoft Exchange Server, Microsoft Mail, Lotus cc:Mail, Novell Global Message Handling Service, and SMTP.

The Notice Server messaging service eliminates the need for gateways and provides protocol-independent interoperability between users of all types of networks and platforms by moving the mail server to Infonet's network, accessible in 175 countries.

The service, which will be expanded to Group Wise and Notes users by the end of July, is available for a flat monthly fee that is based on the number of users, plus a charge for WAN connection.

Infonet will also roll out directory services by the end of September, based on technology licensed from either Unisys Corp. or ICL Plc. Workgroup services including Lotus Notes servers, gateways, and other workgroup e-mail capabilities will come in July. Replication services are scheduled for release in September.

Infonet's other communication service offerings include global Public and Virtual Private Network services, InfoLAN services for high-speed LAN-to-WAN communications, PerspeXion network management information services for the client side, and enterprise integration services.

Infonet is owned by Australia's Telestra Corp. Ltd., Belgium's Belgacom, Japan's Kokusai Denshin Denwa Co. Ltd., The Netherlands' PTT Telecom, Spain's Telefonica International, Sweden's Telia International, and Switzerland's Swiss PTT.

Scitor, a value-added data and voice services network, is a new entry into the commercial WAN services market.

Founded by Sita, a nonprofit cooperative of airlines that built a WAN for its internal use nearly 50 years ago, Scitor made its first move into commercial markets in the last year, driven by the opportunities telecom deregulation has provided.

Scitor, based in Atlanta, now provides international access to a full suite of Lotus Notes services via an agreement with WorldCom, a Public Notes Network provider. Scitor provides the WAN, and WorldCom provides the application hosting for the service marketed by both companies to customers in the United States and abroad.

Scitor is also offering Internet and intranet services and has plans to offer Point to Point Protocol dial-in access to 220 cities in 150 countries.

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NETWARE MIGRATION KIT BOOSTED WITH FILE NAME SUPPORT

THE REXXWARE MIGRATION Toolkit for NetWare now has improved file migration and extended file name support.

Release 1.50 of the kit makes it easier to migrate from the NetWare 3.x platform to the NetWare 4.1 platform.

New features include express file migration, allowing movement of data at optimum speeds; name space support, which accepts file names and attributes from Macintosh, Windows NT, OS/2, and Windows 95; and a database API for flexible migration, based on attributes such as user groups.

Simware Inc., in Ottawa, ships Release 1.50 this week, with pricing starting at $795.

Simware can be reached at (613) 727-1779.

— Paul Krill

Now is a particularly good time to buy a Compaq ProLiant

4500 server. (As if there were ever a bad time.) That's

because from now until June 30, Compaq will give you an

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could get you a corner office.

COMPAQ.

Has It Changed Your Life Yet?

HP calms network telecom event storms

By Mark Leon

HEWLETT-PACKARD CO. has announced new telecommunications management software designed to tame network event storms.

OpenView Event Correlation Services (ECS) is a multiprotocol, real-time, event correlation engine that runs on top of Distributed Management, HP's telecommunications management platform.

Unlike commercial IT networks, which typically use SNMP as the management protocol, public telephone networks are primarily managed with Common Management Information Protocol (CMIP). ECS can filter and correlate SNMP and CMIP events.

ECS processes a large volume of events in real time, which is critical for telecommunications companies that have contractual obligations to maintain service levels.

"HP has provided the phone companies with a significant piece of the infrastructure they need to make service delivery a reality," said Rich Ptak, director of systems management research for D.H. Brown Associates Inc., in Port Chester, N.Y.

ECS processes event streams and can resolve them into event complexes that are easier to interpret.

"They have a logic for building complex responses from relatively simple inputs," Ptak said.

Other filtering and correlation engines often store events in a repository but subsequent processing, ECS is resident in memory and does all its processing as events arrive.

The software architecture allows multiple installations of ECS throughout a large network, thereby distributing the event collection and reducing associated network traffic.

The company is also evaluating the feasibility of putting ECS in Network Node Manager, according to Andy Vanagunas, OpenView program manager at HP. The ECS management software will ship in June.

The run-time version costs $8,000, and the designer product for developers and OEMs costs $40,000. HP can be reached in Palo Alto, Calif., at (800) 637-7740.

ALPHATRONIX STORAGE INSPIRES SMARTER NETWORK HSM

ALPHATRONIX INC. AIMS to raise the bar in network storage management with a new release of its software and plans for universal Java client agents.

Inspire 2.0 offers high-availability protection, a developer interface, and more intelligent Hierarchical Storage Management (HSM). Inspire's Storage Management Engine (SME) will now automatically replicate its internal database, which tracks file systems as they pass through the storage server and protects network backup, HSM, and archiving operations from system failures.

New third-party support software gives OEMs and developers an interface to link applications to the SME.

Two HSM enhancements are designed to increase performance and cut down on network traffic. Peek Mode Data Access will cache requested portions of migrated files in RAM for fast read-only access, thereby eliminating the need to transfer the entire file back to disk storage.

The Pre-Storage migration feature identifies files eligible for migration on a nightly basis and copies them to tape. This makes migration, when disk thresholds are reached, a simple matter of writing a stub file to disk.

The Inspire SME currently runs on Sun Microsystems Inc.'s Solaris servers, with client support for NetWare servers and most versions of Unix. To get wider cross-platform support, Alphatronix plans to use Sun's Java to build client agents.

Inspire 2.0 is available now. Prices start at $20,000. Alphatronix, in Durham, N.C., can be reached at (919) 544-0001.

— *Mark Leon*

▶ Network management software

Norton offers 'suite' set of LAN administration tools

■ Myriad selection of smooth-working features makes NAS essential

By Mike Avery

Yogi Berra may have said, "I'm having déjà vu all over again." Many network managers may feel this way about Symantec Corp.'s Norton Administrator Suite (NAS), Essential Edition 1.0. The product includes several of the company's well-known and proven network and desktop management utilities bound together with new integration software. However, NAS proves greater than the sum of its parts.

Symantec's NAS performs myriad network-management tasks and does most of them very well. There are some rough edges, but surprisingly few considering the breadth of this product. For example, NAS provides the ability to control users' desktops. I prefer NAS' software distribution and inventory mechanisms over the competitors' features.

Version 1.0 does both some features found in competing packages, such as those in Intel Corp.'s LAN-Desk: the ability to monitor file servers, monitor multiple machines simultaneously, monitor network media, and create alerts based on server performance statistics.

Overall, though, NAS is a fine solution for network managers who are not yet using a network management package or are considering

migrating from one management platform to another.

The primary focus of NAS is platform independence, which is a double-edged sword. The advantage is that you can administer different networks with a single software suite. And should you change or upgrade your network operating system configuration files. Even better, you can automatically reinstall older versions of the files onto a user's PC, assuming the machine can connect to the network.

NASw's Details section provides a remarkably useful feature: the ability to track changes to client machines, including tracked files, hard-

DISTRIBUTING SOFTWARE with NAS is easy: Simply choose the desired package, who should receive it, and how you want them to receive it.

system (NOS), you don't have to change management packages.

The disadvantage, though, is that NAS can't access the lowest levels of the NOS. I'd like the system to alert me when a file server exceeds set parameters, as LANDesk does. In contrast, LANDesk doesn't support as many NOS platforms.

I tested NAS on a NetWare 3.12 network with MS-DOS 6.2, Windows for Workgroups 3.11, and Windows 95 clients.

Taking inventory

After activating NAINv, the system inventory module, through NAS' control panel, I easily set up the inventory to scan my node's hardware, software, and configurations once a day. However, I could configure the inventory module to run scans as frequently as desired.

I particularly liked the ability to restrict the length of time in which a partial scan could run. In addition, I could define a list of files I wanted to track. NAS maintains copies of these files in the inventory database. Each time the file changes, NAS puts a new copy into the database. Then, if a system stops functioning correctly, you can easily see which changes had recently been made to the CONFIG.SYS, AUTO EXEC.BAT, SYSTEM.INI, and other

ware configurations, and the ID of the user logged in to the PC. When a machine stops working or exhibits inexplicable changes, it's helpful to know who recently logged on to that PC. This inventory function is the first automated mechanism I've seen on LANs that provides this information.

Many system managers would love to have a database that included property tag or serial numbers. However, even in medium-size networks, adding existing machines to a database is a daunting task. With NAS' Property Tag feature, I could query the users for the property tag numbers I was interested in, thus distributing the work load. In addition, I could run a quick report and sort by tag numbers; this filtered out users who were careless in entering numbers or imaginative in their responses.

I encountered one anomaly in the Benchmarks section. NAS runs benchmarks on DOS-based machines but not on Windows 95 machines. (According to Symantec, the benchmarks for Win95 won't be available until the next release of NAS.) Although interesting, the benchmarks aren't a significant need for most administrators.

The inventory module was not without a couple problems. For example, NAS steadfastly maintained that a Cyrix/TI 40-MHz 486DLC processor was an Intel 45-MHz 486SX CPU.

In addition, when I ran NAINv on a machine with sound drivers loaded, the inventory outcome became quite unpredictable. The PC would lock up, display EMM386 errors, reset itself, or otherwise bedevil the end-user. Even more odd, the same system with CD-ROM drivers loaded in addition to the sound drivers proved stable.

Although it's not clear where the incompatibility lies, my sound board is quite old, and the drivers have not been updated since 1993. Symantec's technical support staff suggested I check the memory manager, check the disk for integrity, and then make sure I had the current NetWare drivers installed.

Everything but the kitchen sink

Given administrators' ongoing struggle to ensure that software is being used according to license agreement terms, NAS' software metering is a real lifesaver. Because the product is system-independent, NAS has to load an executable onto each client or node to perform software metering. This is a significant drawback, because end-users can find ways around loading the driver. In addition, if a user can copy the metered application, that user can also run the copy of the metered application.

Despite these drawbacks, the software-metering module worked well. NAMeter gave me the option to do strict metering, which prevented any unauthorized usage, or system measurement, so I could determine how many licenses I needed.

In addition, the metering software can queue access requests, so users who have been denied access will be notified when the software becomes available. NAMeter can also track software sales, such as Microsoft Office, giving a user accessing one application unrestricted access to the entire suite. Finally, you can access reports that detail such information as how many users have been using an application and how many are currently using that application.

Given NAS' platform-indepen-

> ▶ Symantec
> will offer in
> July Norton
> Administrator
> Suite, Premier
> Edition, in a
> "select" CD
> form.

dent framework, I don't believe Symantec could have done a better job with its software metering. However, a server-based product such as On Technology Corp.'s Soft-Track is a better overall software-metering solution. (See Product Reviews, March 18, page 110.)

Desktop management is another area in which NAS excels. I could define standard desktops with specific programs and assign the desktops to users, groups of users, or nodes. When the user logs in, the NAdmin program in the log-in script assigns the new Windows desktop to the user's machine. This is a great way to create a secure environment: controlling how much freedom users have and gently corralling those who are undertrained or unreliable.

NAS' software-distribution tool is a key piece of the network management puzzle, reducing the time and labor required to install new applications on networked PCs. I was able to easily create distribution packages with the needed commands for distributing and installing the software. I also was able to test and fine-tune the distribution packages until they were right.

Using NADistw, I made simple changes to key configuration files, such as adding lines to WIN.INI to cause administrator packages to load automatically when Windows is launched. You also can make more complicated changes with the Basic-like scripting language. For

THE BOTTOM LINE

Norton Administrator Suite, Essential Edition 1.0

Providing near-total control for harried network administrators, this product simplifies and reduces the overhead involved with network management.

Pros: Well-integrated suite of network administration utilities; platform-independent; smooth-working software-distribution system.

Cons: Minor glitches in installation and remote-control software; lack of server and network monitoring options.

Symantec Corp., Cupertino, Calif.; (800) 441-7234, (541) 334-6054; fax: (360) 805-1438; http://www.symantec.com.

Price: $580 for a 10-user license.

Platforms: Clients: DOS, Windows 3.x, Windows 95, Windows NT, Macintosh, OS/2 2.0 and later. Server: NetWare 3.x and 4.1, Wires 4.5 or later; IBM LANServer 2.0 or later; Digital Pathworks 4.1 or later; and Windows NT Server 3.1 or later.

THIS WEEK

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4mm Tape Library N/2

▪ OfficeConnect N/4

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HOW WE REVIEW

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Questions, comments, kudos? Send a message to the reviews editor at dan_sommer@infoworld.com. Please include "Talk Back" on the subject line.

► Network storage library

DAT tape changer eases multiserver-network storage

■ EXB-218 has robotic handler, removable 18-slot magazine, two tape drives

By Rod Chapin

A DMINISTRATORS of multi-server networks looking for a storage solution that can perform automated backup and restores, file migration, and archival storage may want to take a look at Exabyte Corp.'s EXB-218 Automated 4mm Tape Library. This automatic tape changer (the company's first 4mm offering) uses the same robotics and chassis as the company's EXB-210 8mm changer.

The EXB-218 uses two 4mm DAT tape drives and 18 DAT cartridges. (Although Exabyte is the largest maker of 8mm drives, it uses Hewlett-Packard Co.'s DDS-2 4mm DAT drives for the EXB-218.) The tape changer uses a removable 18-slot magazine plus one fixed slot.

Most administrators will choose to use the fixed slot for a cleaning cartridge, but it can also be used for a regular tape cartridge. The magazine was well-designed and easy to insert and remove from the tape changer, making quick work of periodic tape rotations.

The EXB-218 uses a robotic handler to move the tapes to and from the drives. You can get an optional bar-code reader from the company for $685. When you place a label imprinted with a bar code on a cartridge, the tape changer can select tapes based on the label.

Exabyte's 4mm automatic tape changer complies with the SCSI-2 command set. Therefore, your backup software can control the tape changer via the SCSI interface or a serial port.

The unit is available in stand-alone and rack-mounted models. The EXB-218 has a lockable door for security and a clear window that facilitates administrator intervention.

In addition, there is an LCD control panel at the top front of the tape changer, allowing you to set the SCSI ID and other configuration options, as well as view the status of the tape changer. One nice feature of the LCD screen is that you can tilt it to get a better viewing angle.

Setting up and running the EXB-218 was a breeze.

I simply had to plug the SCSI cable in to the SCSI card via the external connection. Next, I specified the SCSI IDs for the two tape drives and the changer itself through the control panel. Then I installed the backup software.

The EXB-218 performed well, without fail. However, the drives' "head cleaning needed" indicator came on after only a week or so of use.

I never encountered a bad backup. The only obstacle I faced was a bad SCSI cable.

The EXB-218 is a sturdy tower of a tape changer, measuring a monstrous 22 by 9.5 by 21.4 inches and weighing 76.5 pounds with the two tape drives installed. Its size makes the EXB-218 difficult to move around.

Although the tape changer is bar-coded, it doesn't offer a redundant power supply option.

The DAT drives have an average hardware compression of 2-to-1 and an average transfer rate of 60MB per minute.

The robotic handlers have an average move time of 10 seconds.

THE EXB-218 Automated 4mm Tape Library uses an 18-slot magazine plus one fixed slot.

Norton

example, I distributed even large software programs with ease.

The software distribution module let me determine which users received the software updates and installs, and how often. (See screen shot, page N/1.) The distribution is triggered by either the NADist or NADistw programs (for DOS and Windows, respectively) when users first log in to their PCs.

End-users can defer a lengthy installation to a more convenient time by refusing the distribution package at log-in time. However, administrators can set up the distribution to

install the software anyway after a selected number of refusals.

For remote workstation control, NAS includes pcAnywhere, which is a competent performer, albeit not an exciting one. Unlike LANDesk, pcAnywhere didn't let me take over the file server and control multiple nodes. Furthermore, pcAnywhere's remote control seemed slower than LANDesk's.

I encountered an oddity when I attempted to control a Windows 3.1 client from a Windows 95 machine; pcAnywhere on the Win95 machine locked up and wouldn't let me terminate the program. In the end, I had to reboot the machine to regain control. (The company has not encountered this problem before.)

Symantec provides virus protection with NAS, bundling the company's Norton AntiVirus. Norton AntiVirus detected the few viruses I threw at it and didn't get in users' way. In addition, the software-distribution scripts included with NAS made it very easy to install Norton AntiVirus on all the clients on my test network.

Version 1.0 includes a built-in scripting tool, called Symantec Basic, for automating processes or tasks that can't be automated using the simpler tools. Symantec Basic can do anything any other Basic tool can do.

I used the tool in conjunction with the software distribution module to change WIN.INI files, and

NORTON ADMINISTRATOR SUITE'S change-tracking features make it easy to discover the changes made to a PC and who made them.

Symantec Basic worked as expected. The scripting tool is included for convenience, but programs generated by other programming tools should do as well.

Getting going

Installing NAS was a painless procedure but long, approximately 30 minutes. Once the installation was complete, I looked at the NetWare log-in script and discovered that the

code that activates NAS was put after the last Exit statement in the log-in script, guaranteeing the NAS code would never run. I was able to correct this in just a few seconds using Syscon's log-in script editor.

However, it was a task I would have rather avoided.

More interestingly, the installation process didn't grant anyone access permissions to NAS or the inventory databases. As the supervisor, I was the only person who could even see the directory that held the software and database.

As a result, everyone who logged in received error messages that said the programs were not available. I

was able to easily resolve this by granting access permissions to the users via Syscon. It's not clear why the program didn't grant these permissions initially. However, some administrators will prefer that NAS not make the software immediately available to all users.

I was surprised that NAS didn't include any manuals. The documentation was provided in Adobe Systems Inc.'s Acrobat format on the CD-ROM with NAS. However, you can purchase a hard copy of the manuals for $25, or you may view them on-line or print them.

Because NAS is so rich in features and has such depth, the manuals are essential. I strongly recommend purchasing the hard-copy manuals. The on-line version isn't very easy to read with Adobe Acrobat, and printing the full set (more than 1,000 pages) will tie up your printer for quite some time.

The hard-copy manuals are nicely laid out, well-organized, and sprinkled with relevant screen shots and diagrams. I found the documentation very useful, providing numerous exercises, or scenarios, that made the text more understandable. In addition, going through the exercises made configuring NAS easier.

Mike Avery is a system manager for an international contract-research company. His Internet address is mavery@pdcx.com.

► Remote access solution

3Com's OfficeConnect effectively keeps remote users in business

By Andre Kvitka

BRANCH OFFICES and workgroups within an enterprise require reliable methods for communicating and sharing information with a central LAN segment. For administrators in need of such a solution, I recommend 3Com Corp.'s Office-Connect. It's easy to use, inexpensive, and doesn't require a lot of technical expertise.

I tested the four currently available components in the Office-Connect solution: an eight-port managed 10Base-T hub, an ISDN bridge/router, a fax server, and a print server.

Both the fax and print servers are designed and manufactured by Castelle Inc. in Santa Clara, Calif. (Aside from providing additional components in the future, 3Com is working with other vendors to offer devices for the Office-Connect family.)

Each component is approximately the size of a VHS video tape. When stacked on top of one another, the entire stack is no more than a foot high. (Some of my Test Center colleagues thought OfficeConnect was so cute they wanted to touch it, play with it, and even hug it.)

Hub and router

The front panel of the eight-port hub provides the standard port status LEDs, as well as LEDs that display the network utilization percentage — a nice touch.

Located at the back of the unit are the 10Base-T ports, a serial interface, and one 10Base-2 connector for daisy-chaining OfficeConnect components.

The eight-port hub includes Transcend Quick Configuration Manager, a Windows management utility that supports remote monitoring.

Quick Configuration Manager is based on 3Com's Transcend Network Management application, and thus it allows an organization's central 15 department to manage the hub remotely.

I was surprised by Quick Configuration Manager's powerful yet flexible set of features. For example, using the extremely simple interface, I was able to configure security (including setting up users and specifying the equipment allowed to communicate through the hub), configure a backup connection, monitor various devices on the network and report on problems, and

configure the alert LED.

In addition, I appreciated the ability to graphically display information about the ports and the hub (see screen shot).

You can also manage the hub using a serial port and a Windows

THE FOUR CURRENTLY AVAILABLE components for OfficeConnect are a hub, ISDN router, fax server, and print server.

workstation, a VT100 terminal, or a VT100 terminal emulator.

It is also possible to manage the hub with an IP/IPX network or a VT100 terminal emulator with Telnet. For simplicity's sake, I chose to use a Windows 3.1 workstation.

For LAN-to-LAN connectivity, OfficeConnect offers an ISDN router with a RISC processor.

Like the hub, the router's front panel has power and port-status LEDs, as well as a bandwidth meter that shows the percentage of ISDN port utilization.

The 10Base-T and 10Base-2 connectors, the serial port for managing the component, and the ISDN and voice connectors are located at the back of the unit.

You can use the voice connection for a Public Switched Telephone Network phone or any other analog equipment.

In effect, the voice connection is an analog-to-digital converter, allowing you to use a conventional phone over an ISDN line.

The router supports TCP/IP and IPX routing; Point to Point Protocol (PPP) for WAN interoperability; X.21, V.24, and V.35 WAN interfaces; and SNMP MIB II management.

To manage the router, I simply connected a null modem cable to the router and my Windows 3.1 machine, and then I used Windows Terminal to configure the unit. (Terminal emulation is not the prettiest

or the easiest way to configure a device, but it's effective.)

I had a choice of configuring the router to connect to an ISDN connection, a remote NetWare network using IP/IPX, an IP bridged network, or an IP routed network. In addition, I could connect to the Internet via PPP.

I configured the router to communicate to both a Net-Ware server via IP/IPX and to the Internet.

Thanks to the well-organized documentation, I completed my configuration quickly and easily.

Fax and print

If you've ever used a Castelle 2000 or 3000 series fax server, you'll have no problem with the OfficeConnect fax server. The only difference between Castelle's products and those offered by 3Com is the hardware.

Unlike Castelle's bread-and-butter line of fax servers, the unit I installed resembled the other OfficeConnect hardware devices

USING THE TRANSCEND QUICK CONFIGURATION MANAGER, you can click on the hub or a single port and graphically view various statistics.

and included only one 14.4Kbps fax/modem. The fax server also uses Castelle's software.

There is a lot of muscle in this small fax server. For example, if the line is busy, the unit retains outgoing faxes and sends them when the line becomes available.

The fax server can deliver inbound faxes in a variety of ways. The simplest method is to have every inbound fax go to an unaddressed mailbox from which a designated user manually routes the faxes to the intended recipients. For security's sake, only those people designated as fax routers can view the first page of the fax for routing purposes.

Other more complex methods of delivering faxes with Office-Connect's fax server are Subaddressing (also known as TIA IS-141 standard), Dual-Tone Multi Frequencies (DTMF), and Direct Inward Dialing (DID). Both Subaddressing and DTMF routing require the sender to enter the intended recipient's assigned mailbox number, as well as the fax number. Unless both the sender and recipient are in the same organization, these methods are clunky and impractical.

DID is the most convenient routing method, but it is not very cost effective because it requires everyone in an organization to have a different fax number.

The fax server includes DOS-and Windows-based administration utilities and client software.

Following the documentation, I installed the fax server utilities via DOS and then ran a Windows administration program to configure

the fax server, create users, and assign rights to them.

Finally, I loaded the Windows client software from the file server to users' desktops. (Users can load client software themselves.)

The print server is physically the smallest of the OfficeConnect com-

ponents I tested. The front of the unit displays alert, packet, and power LEDs. Two parallel ports are located at the back of the print server, along with a 10Base-T port and a 10Base-2 port.

The print server has DOS-based utilities with a NetWare look and feel. Installing and configuring the unit was smooth and painless. I was able to choose between configuring the unit in standard print server mode or remote printer mode.

Using the DOS-based CPAdmin utility, I named, configured, and assigned peers to queues; I set up and running within 5 minutes.

I could use CPAdmin to change the print server name, port configuration, master file server, password, polling intervals, and password assignments. All in all, CPAdmin is a simple, yet effective, utility.

Nothing's perfect

I was disappointed that the administration utilities for the fax and print servers had very different interfaces. Unlike the print server's NetWare look and feel, the fax server utilities sported a simple but proprietary interface.

In addition, some integration features were not well thought out. For example, when creating users, my choice for a fax print destination was a printer connected to either a parallel port on the fax server or a print queue on the file server.

Because I chose to use the print queue that I had already created when I installed the print server, I wanted to simply select the queue from a list. Instead, I had to remember the name of the print queue and type it in.

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LAN TALK · PAUL MERENBLOOM

Weighing 'net safety with compatibility, speed a constant

PERHAPS YOU SAW the announcement a few weeks back that Security Dynamics Inc. (SDI), in Cambridge, Mass., was acquiring RSA Data Security Inc. Hanna, a "token" company acquiring one of the two holders of public-key encryption technology? Some folks have commented that this makes no sense — but I think it does.

Lots of us have adopted tokens for authenticating users of our networks. If you have one of Shiva Corp.'s LANRover products (which are still among the best ways to enable remote access), then you might be familiar with the integration of tokens with LANRovers to augment user identification and authentication.

There is no question that the use of one-time passwords generated by token cards (or software implementations called soft tokens) make guessing passwords a thing of the past and strengthens security to and within networks; however, these devices do nothing to protect the data that is transmitted over the LAN, WAN, or public telephone lines that we use to gain remote network access.

SDI's acquisition of RSA's public-key encryption technology should reinforce a security message I've advocated for a long time — namely, that an effective security "blanket" for your network and servers must be multidimensional.

From my point of view, we need to adopt the "Chinese menu" approach — take one choice from the identification and authentication group, one from flow control (firewalls), and one or more from the data encryption column. The combination of these provides a system of multiple barriers that is difficult at best to break — or to break through.

The token and firewall technologies are getting easier to understand as more people use these products and the market begins to mature. Encryption, though, is another story.

Many networking vendors recognize the need to protect data within the network and are integrating the data encryption technology through their relationships with Cylink Corp.

These capabilities should be available by fall and will complement the remote-access encryption products that scramble data transmitted over public dial-up lines.

These encryption systems are likely to have an impact on perceived performance and throughput. The biggest reason not to encrypt in the past has been the overhead required to encode and decode the data.

On a PC, even a Pentium system, many CPU cycles can be consumed in locking and unlocking data. Users, in turn, perceive this slowness as an inhibitor and often trade speed for security.

Depending on how it's done, adding encryption to router switches could put us back in the performance penalty box. As our networks get more complex, we need to look to our key vendors for guidance. And who has time to become an expert in installing and supporting encryption products?

We can expect to see stand-alone encryptors, add-in cards for PCs, laptops, routers, and switches that offer both turnkey solutions and compatibility with your transmission speeds and performance requirements.

Before buying, though, we also have to look at the big picture. Will the encryptors be compatible with your router network? Can they work together to provide end-to-end encryption, or will you face the prospect of one system for in-band communications and another for remote access?

The demands are clear. We need to protect our data and network resources and provide fast, secure remote access without sacrificing manageability, scalability, or our sanity.

Paul Merenbloom is vice president, technology research at Piper Jaffray, in Minneapolis. You can reach him at plmeren@mcimail.com.

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Measuring your monitor's screen size can be a game of inches, more or less

If man is the measure of all things, you'd think he'd have no trouble measuring the diagonal on a monitor.

Recently a reader posted a complaint in the New Gripes area on InfoWorld Electric saying his new 17-inch monitor was virtually the same size as his old 15-inch monitor.

"I was a little shocked to discover that the new monitor was smaller than my old monitor and the viewable area was .25 inches larger than my old 15-inch monitor," the reader wrote. "Apparently the industry has changed the way they measure monitors in the last six years. I realize all the manufacturers do this, but it burns me that they can upgrade their 15-inch monitors to 17 inches by simply redefining the way they measure them."

You could barely blame him. Why call it a 17-inch monitor if it's hardly bigger than a 15-inch monitor used to be? Out of curiosity, I took out my ruler and measured the new 17-inch monitor I recently bought. The diagonal of the viewable area on my screen was almost exactly 16 inches. I wasn't sure if I should feel cheated because it wasn't 17 inches, or elated that at least it was larger than the display the InfoWorld Electric griper had purchased.

I knew this whole issue was one that has been bandied about before. There have been some user lawsuits, and some states have looked into passing truth-in-advertising regulations governing how display measurements could be advertised. Hadn't anything come of that? Apparently not.

One thing I noticed, however, was that most recent ads for monitors — although they still promoted the device as a 17-inch, 20-inch, or whatever display — included the diagonal measure for the viewable screen as well somewhere in the ad. Was this a sign that the vendors are cleaning up their act?

I wasn't sure who to talk to about this. There was no one vendor to blame, because all the monitor vendors were doing pretty much the same thing.

I decided to talk to Wayne Hinson, vice president of NEC's Multisync Display division, in Chicago. Hinson is involved in a consortium of monitor manufacturers who are trying to establish standards for the way monitors are measured and advertised.

"We've been working with the Federal

Trade Commission [FTC] to determine a set of standards similar to the ones that govern TVs," Hinson said. "Unfortunately, the FTC has come to the realization that it's not as easy to do that with computer displays as it is with television sets."

Since a computer display is dependent on the graphics card, the resolution mode, and a variety of other aspects, figuring out exactly what to measure is a complex issue.

"What has been done is that everybody has agreed that, if, for example, you say 17-inch in an ad, within the vicinity of that you have to prominently say what the actual screen size is," Hinson said. "The screen size is defined as the largest picture size that can be displayed on the monitor that falls within the actual glass bezel to bezel."

Why not do away with the 17-inch designation and have each manufacturer advertise the actual screen area of its monitor?

"I'm sure that would cause a huge amount of customer upset," Hinson said. "You need that frame of reference. People know 14-inch, 15-inch, and 17-inch, and while there may be some variance in each group, the products in each are comparable."

Although it is no doubt motivated by the threat of legal action, at least it does appear the consortium of monitor vendors is making a good-faith effort to set some standards. Unfortunately, Hinson said that the FTC lost interest in the project due to its complexity, so the consortium is now trying to work with a consumers standards group.

"The FTC decided the issue just wasn't important enough," Hinson said.

Not important enough? I'm not so sure about that. It's hard enough just figuring out how to measure a display, much less measuring how important it is to do so.

Ed Foster's Gripe Line examines issues raised by readers concerning product quality, customer service, and sales practices. Send gripes to gripe@infoworld.com or call (800) 227-8365, Ext. 710. Participate also in the Gripe Line forum at InfoWorld Electric at http://www.infoworld.com.

WHEN NICHOLAS PETRELEY likes on Stewart Alsop (see Down to the Wire, April 29, page 125), readers take notice. And several readers not only noticed but toiled with Petreley recently when he debunked Alsop's statement that, when combined with standard components, Windows 95 "makes it easy to package computer systems." (See Distributed Thinking, April 22, page 114.) Meanwhile, in another corner, one reader offers a novel suggestion for dealing with recalcitrant Internet service providers (ISPs).

Plug and play? Nope

NICHOLAS PETRELEY was speaking the gospel truth, Amen brother. Just because the flashy blurb on the box says "plug and play" doesn't mean anything. It really tees me off when I read some marketing crap from a certain Redmond, Wash., software giant telling me how their new OS release is going to solve all of the hardware and software configuration problems that crop up in today's PCs. The people I really feel for are the poor computer illiterates who go to some computer superstore and spend their hard-earned bucks for one of these systems and don't have a friend like Petreley or me to help them through the minefield of configuration files and jumper settings. Why hasn't there been more of a consumer revolt?

Dwin M. Craig
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I LOVED Nicholas Petreley's wonderfully insightful comments about Microsoft. He has probably become a source of discomfort to Microsoft. Of course, this means that the next version of Windows "won't ship until Lotus, Norton, WordPerfect, and Petreley don't work." The good news is that he will be in great company. The bad news is that he will probably be sold many times for far less than his real value.

Arn Kratzer
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IN STEWART ALSOP's column, he made the oversimplification I've been arguing against for years. His new NCA system will be "easy" to fix in the future because it is nothing more than a collection of parts. In my experience, a

collection of parts cannot compare to a well-designed system, especially in a network environment.

For quantity one, there is truth in what he says. However, when purchasing many systems over a period of time, these "savings" are quickly lost in the additional effort to get those various parts configured the same way.

David Roden
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Using Notes Web Navigator

WE'VE BEEN using the Notes Web Navigator since it came out. (See From the News Desk, April 29, page 3.) Although Notes and Web systems are both relatively "expensive to implement," Michael Vizard might want to take a closer look at where that cost is going. Most companies don't spend gobs of money on custom software because they have to maintain it. Their investment isn't protected by a vendor, while Notes provides a reasonable upgrade path to keep them current. Where is this path in a Web server? Well, normally the path lies in custom redesigns. Notes' mainte-

IT REALLY TEES ME OFF WHEN I READ SOME MARKETING CRAP FROM A CERTAIN REDMOND, WASH., SOFTWARE GIANT TELLING ME HOW THEIR NEW OS RELEASE IS GOING TO SOLVE ALL OF THE HARDWARE AND SOFTWARE CONFIGURATION PROBLEMS THAT CROP UP IN TODAY'S PCS.

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nance costs, security, replication, and its ability to distribute information across a variety of different networking paths make it a more convenient and reasonable platform for internetworking.

Will it stay that way? That's a question for the future. Most companies want to make money now, though. So they're picking Notes.

Mike Woolsey
Reston, Va.

Of ISPs and collapses

I TRIED Used Bob Metcalfe's call for bandwidth guarantees for ISPs. [See From the Ether, April 29, page 52.] In fact, it is such a wonderful idea that I would ask him to use his office for an even nobler crusade. We'll start with airlines. How many of us have bought a ticket for a flight that was delayed, or canceled? Next, the telcos. How many of us have had telephone lines go down and out

come back in service fast enough? Next we can joust with the IRS. How many of us have been owed refunds and have had unreasonable delays in collecting back? Now there is hope. We can write in appropriate penalties for inappropriate service (such as is the case for airlines and bumped passengers). Let me make a modest proposal. Sponsor a contest: "Best proposed penalty for an ISP who fails to supply data in a timely fashion."

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BOB METCALFE's statement was great: "In case you've been wondering, the reason we must suffer through the Internet's coming collapses is to discredit this ideology and, shortly thereafter, dump this intelligentsia." Unfortunately, this is going to create a "power vacuum," and it is not clear that any one or group will step in to fill the void.

I think that it is better to build the "cyber-Internet" based on DI Version 8. Just as it is important to get away from a sinking ship so it won't pull you under, it is better to move further from the Internet now than closer.

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REGARDING Carl Quesnel's comments about the impending Internet collapse and the analogy to the highway system [see To the Editor, April 29, page 66]: To argue that I should obtain through other sources everything that I can limits the Web significantly.

I get virtually all of the Unix utilities that I use off the Net. These files are either much larger than Netscape, may or may not be commercial, and are almost never available through other sources. What do I do then? I now use the Net to transfer large databases between our sites. This information can be tens or hundreds of megabytes. Transmitting it across the Net is faster, cheaper, and more reliable than using a tape. In the process, we are using up some of the available bandwidth, and I'm sure that everyone else's transmissions run a little slower as a result. Compared to five years ago, I'm using a factor of hundreds, if not thousands, more bandwidth.

Quesnel's argument that "we can't have our highways so jammed full of 18-wheelers that no one can drive to work" is truly a strange analogy: Thirty-some years ago in California, there were no highways more than two lanes wide, and there were no 18-wheelers. The answer to the need for commerce was to increase the quality and width of the highways. In effect, the solution to increased traffic was to increase the bandwidth, not to limit what could travel the highways.

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News management team sets the agenda for timely print and on-line coverage

Thanks largely to the Internet and related technologies, this is a particularly great time to be in the technology news business. No one knows that better than Michael Vizard, *Info-World* executive editor for news and head of our 25-member news team. In recent weeks, Vizard has completed building

a management team focused on delivering the most timely and useful news reports in the business.

The newest addition is Tom Moran, who joined InfoWorld May 1 for the second time, this time as news editor. He returns after a seven-year stint with *Macworld*, a monthly publication also owned by InfoWorld's parent company, International Data Group. Before joining *Macworld*, Moran edited the Hardware section here at InfoWorld. As news editor, Moran works with a knowledgeable team of section editors.

Ephraim Schwartz heads our hardware coverage and edits the Client section. Prior to joining the InfoWorld staff in March, he was editor in chief of *Computer Buyer's Guide and Handbook* and *Laptop Buyer's Guide and Handbook*, two national newsstand publications. His e-mail address is ephraim_schwartz@infoworld.com.

Michael Ricciuti directs the software coverage and edits the Server section. He has been at InfoWorld two years, starting as a senior writer covering database software. He also heads our six-person Boston news bureau. Before joining InfoWorld, Ricciuti covered the software business for *Datamation*. Contact him at michael_ricciuti@infoworld.com.

Michael Parsons edits the Networking and Internet sections and directs the reporting

teams covering those areas. He joined us in April from IDG News Service, also a sister organization, where he was a correspondent covering news from the United States. Before that, Parsons spent two years at a publication in the United Kingdom that has morphed into *Network News*.

In addition to producing the news report in print every week, the news management team works closely with Dana Gardner, news editor for InfoWorld Electric, to contribute to the daily news feed at http://www.infoworld.com. Our news team is eager to hear what you have to say about our news coverage. Send specific comments to the section editors; send general comments to michael_vizard@infoworld.com or tom_moran@infoworld.com.

See you at PC Expo

We're planning a meeting between InfoWorld staff members and subscribers during PC Expo, which is June 18 to 20 at the Javits Convention Center in New York. Specifics haven't been established, but if you would like to be invited, send a message to Jo Pirnik, editorial communications coordinator, at jo_pirnik@infoworld.com.

Sandy Reed is editor in chief of InfoWorld.
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The case for 16 BITS

By Martin L. Rinehart

We've had PCs capable of 32-bit computing ever since the introduction of Intel Corp.'s 80386 chip almost a decade ago. OS/2, Windows NT, and Windows 95 now provide operating systems that are ready to run 32-bit software. Although vendors suggest this has opened up vast new computing vistas, it has in fact added to the "bloatware" problem, making many small, fast applications bigger and slower.

If you are doing any PC-based development, you'll be facing this issue. If you've already embraced a 32-bit operating system, you've probably found that recompiling your 16-bit applications can make them fatter and slower. If you

> **Despite the hype around 32-bit, 16-bit applications turn into 'bloatware' when recompiled**

have a mixed environment, where work gets done in every operating system from DOS to Windows NT, you may be surprised to find that both 16- and 32-bit applications can be options on all of your platforms.

There are advantages to both 16- and 32-bit computing. Each is better some of the time, and both are viable choices almost all of the time.

Some applications demand the power of 32-bit computing. For example, 3-D virtual reality modeling (VRM) and CAD benefit from 32-bit computing. The game Doom is a widely known example of VRM, but the technology has much broader potential than just game playing.

In 32-bit computing, the basic unit of data is 32 bits wide. This means that character data (all SQL database operations are character-based) can be processed four characters at a time. Integers that range from negative 2 billion to positive 2 billion can be handled as a single unit.

The CPU can manipulate 32-bit values in a single instruction and often in a single clock cycle. Given a large enough cache, for example, a 100-MHz Pentium-class computer can perform about 100 million 32-bit additions in a single second.

In addition, code addresses are 32 bits wide in 32-bit computing, which expands the amount of directly addressable RAM from 64KB (16-bit addresses) to 4GB (32-bit

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9. What capacity hard drives do you want installed? _____

10. What type of video do you want installed? (Write in code)
(A) SVGA   (D) Active Matrix VGA
(B) VGA   (E) Passive Matrix VGA
(C) MonoVGA   (F) Other

11. What additional drives do you want installed? (Write in code)
(A) 1.2 FD   (D) SCSI
(B) CD ROM   (E) Other
(C) Tape Backup

12. What operating systems do you want installed? (Write in code)
(A) MSDOS   (E) OS/2 Warp
(B) Windows   (F) NetWare 3x
(C) Windows 95   (G) NetWare 4x
(D) Windows NT   (H) UNIX

addresses) per segment.

PowerSoft Corp. prefers the "flat" memory model provided in 32-bit systems because of the increased amount of addressable RAM, according to Allan Dull, the company's project manager for emerging technologies. In 16-bit DOS, applications can manage multiple segments, each one restricted to 64KB, to get as much as 500KB of addressable memory. Comparatively, in a 32-bit Windows NT flat model, applications can address 500MB in a single segment.

With all these advantages, why not do all application development to 32 bits?

BLOAT WITH NO BENEFIT.

Because nothing in computing ever comes without a price. In the case of 32-bit computing, the cost is the loss of the smaller size of 16-bit applications. In many cases, 16 bits handle an application's dominant data values. These applications (in fact, some portions of all applications) simply expand and slow down when they are converted to 32-bit code.

Symantec Corp. provides 16- and 32-bit versions of its development tools by running its own 16-bit and 32-bit compilers on a common code base.

"The 32-bit version is usually bigger," says Mansour Safai, Symantec's general manager of development tools.

Consider a workgroup scheduling application that adds 7 to a date when it's ready to progress from one week to the next. In 16-bit code, the instruction that adds 7 takes 3 bytes in the executable — 1 byte for the machine instruction that says "add" and 2 bytes for the numeric constant 7. In 32-bit code, the same operation takes 5 bytes — the same byte says "add" but the numeric constant fills 4 bytes.

In the Intel architecture, 16- and 32-bit instructions do not differ in timing. An integer add, for example, takes the same number of clock cycles regardless of the data's width. However, program size is critically important to overall speed. The CPU handles data almost 10 times faster than the bus transfers data from RAM to CPU. The smaller the program, the larger the probability that its instructions and data are in the CPU's cache or in an intermediate cache.

Similarly, 32-bit addresses are a mixed blessing. For example, a 100KB program using 32-bit addresses doubles the size of each address without any offsetting improvement. With both data size and address size doubling, many programs that do not require 32-bit computing get fatter and, consequently, slow down. If the application is larger than 1MB, 32-bit code will probably be the better choice. One way to test this is to generate both the 16-bit and 32-bit executables, then compare sizes and times of typical operations.

THEORETICAL FLEXIBILITY.

Intel's microprocessor architecture lets programmers use 16-bit data and addresses in 32-bit code, and it permits 32-bit data and addresses in 16-bit code. In the earlier example of adding a numeric constant 7, that could have been done

in 4 bytes, not the 5 suggested above, if the programmer specified that the value was 16 bits. The programmer's compiler or assembler could generate an additional byte that tells the CPU to reverse the status (16 or 32 bits) for a single instruction.

This lets a program that works primarily with 16-bit values take advantage of 32-bit instructions when they are helpful. Alternatively, it would let a 32-bit program use 16-bit addresses if the large address space were not required. C and C++ programmers (see box, below) can specify the size of their data values. Some compilers take advantage of these specifications to optimize the output code via a mix of instruction sizes.

In an .EXE or other executable file, code is stored in related groups known as segments. The actual setting of 16- or 32-bit size is specified in the segment's header. The CPU can switch between 16- and 32-bit code when it switches from one segment to another.

Unfortunately, current operating systems tend to ignore this capability, so it is more theoretical than practical. Windows 3.x and Windows 95, for example, require a "thunking" layer to resolve the difference in 16- and 32-bit addresses. (See "A seamless transition for Office applications?" *Thunk again*," Aug. 21, 1985, page 58.) The thunking process is slow enough to lose whatever advantage might be realized from optimizing segment types to fit the data needs of the program. Thunking is primarily useful for using older 16-bit library code with newer 32-bit programs.

A HETEROGENEOUS UNIVERSE.

Most organizations, large ones in particular, have a mix of PC computing environments. Although 16-bit Windows 3.x is still the most popular desktop operating system, it is being replaced

Applications originally written for 16-bit environments may be simple to recompile as 32-bit applications, but the chances are that recompiling will create fatter, slower programs.

by 32-bit Windows 95 and Windows 95/NT OS/2 and Windows NT Server, both 32-bit systems, are commonly found on applications servers and are used for some high-end, end-user applications. Good old 16-bit DOS is small, but it is still an almost universal part of every desktop.

The exact speed with which 32-bit computing is replacing 16-bit computing remains open to debate.

Many companies have opted to bypass Windows 95 altogether and are waiting for NT 4.0 to arrive. Others have slowed their migration to Windows 95. And still others have opted to stick with Windows 3.1 for the foreseeable future. (See "32-bit development paradise beckons, but look before you enter," March 18, page 68.)

What does this mean if you are developing applications that will be deployed across the enterprise? The most important point to keep in mind is that an operating system's "bitness" is not strictly correct.

Remember that VFW applications, such as Doom, require 32-bit application. According to Geno Coschi, development manager for Powersoft's Watcom, Doom runs in a DOS-extending environment that selects the 32-bit computing size for applications and returns to the 16-bit size for DOS' hardware support services, such as disk reads. The game was written using the 32-bit Watcom DOS compiler. Windows 95 uses a similar hybrid technology.

Windows 3.x applications are commonly 16-bit programs, but using Microsoft Corp.'s Win32s API you can run 32-bit programs under Windows 3.x. Even Windows NT, an almost purely 32-bit system, runs 16-bit DOS applications.

You practically have a choice of 16- or 32-bit computing, regardless of the platform.

Fortunately, most development tools vendors support both 16- and 32-bit compiling from a single code base. In many cases, the programmer simply selects the output target from a menu and clicks on a Build button to generate the finished executable.

Using the Watcom compilers you simply pick the compiler and run it, Coschi says. Watcom will support both 16- and 32-bit code as long as customers demand it, he adds. Borland International Inc. and Symantec have similar policies. (Microsoft is minimizing support for 16-bit development — you have to use Visual C++ 1.52 for 16-bit code.)

Using many tools, your programmers can generate both 16- and 32-bit output in a matter of seconds or, for very large systems, within a few minutes.

Although there is no substitute for actual testing, you'll usually find that the version with the smallest executable size is also the fastest version of your application.

Some development tools, such as PowerSoft's PowerBuilder, produce a byte code output that is independent of underlying 16- or 32-bit architecture. The byte code is processed by a small interpreter that is custom written for each operating platform.

Powersoft's Dull says simply, "We're bit neutral."

Byte code systems free developers from any concern about the underlying chip size, but, once again, there is a price. Interpreted byte code cannot run at the same speed as, for example, compiled C++. Visual Basic and Java applications also use byte code technology.

ACHIEVING THE 32-BIT BLESSING.

Recompiling 16-bit programs into 32-bit programs will frequently prove disappointing. Applications originally written for 16-bit environments may be simple to recompile in the form of 32-bit applications, but chances are that recompiling will create a fatter, slower program. Large programs will often need a thorough rewrite to benefit from the potential of 32-bit code. Many smaller programs will perform better as 16-bit programs.

Although the proponents of new vendors would have you believe that 32-bit software will quickly replace all the "old-fashioned" 16-bit code, the truth is that 32-bit software is just another arrow in the quiver.

Sometimes it will be a dramatic improvement over the old software it replaces. It will certainly enable new applications that weren't possible in a 16-bit world. But if you're not careful, it can change small, fast code into bigger, slower code.

If your developers bear in mind that their work will probably be used in both 16- and 32-bit environments, you can enjoy the best of both worlds.

Martin L. Rinehart is a consultant and an author of books and articles on PC programming. His latest book is Foundations of PC Assembly Language Programming, *IDG Books, 1996.*

THE LONG AND SHORT OF IT

The C language grew up on a wide variety of computers. Its main advantage was, and still is, its portability, which has created a problem for programmers. When they recompile their 16-bit C and C++ applications for a 32-bit environment, all of their _int_ data doubles in size. This poses a management challenge during the transition from 16- to 32-bit applications.

C and C++ programmers can use _int_ (integer) data, or they can specify _short int_ (just _short_, for short) or _long int_ (or just _long_.) If they want to be more specific.

However, the C standard didn't specify the length of an _int_ variable. Instead, it specified that a _long_ was as long or longer than an _int_, an _int_ was as long or longer than a _short_. The _int_ was normally represented in the word size native to the CPU.

For PCs, the original word size was 16 bits. C compilers for PCs generally used 16 bits for both _short_ and _int_ data. The _long_ integers were 32 bits wide, requiring special handling.

Most PC programmers ignored the _short_ specification, since it was merely a synonym for _int_.

With the advent of 32-bit operating systems, 32-bit PC compilers began to treat _short_ integers as the 16-bit special case, compiling both _int_ and _long_ integers as 32-bit values.

As a consequence, when 16-bit C and C++ programs are recompiled for a 32-bit environment, the common _int_ data all doubles in size, even though the programmer originally took care to ensure that _int_ values fit in 16 bits. The result is the worst of both worlds: 32-bit data space is used for values carefully chosen to fit in 16-bit words. This yields all bloat and no benefit when you recompile for a 32-bit system.

If you are managing C and C++ programming in a 16-bit environment, make sure all your programmers are aware of this problem. It's easy for them to use _short_ and _long_ specifications that will generate the best possible code in both 16- and 32-bit environments. The common _int_ data type should be avoided.

THIS IS
YOUR
COMPANY.

YOU NEED
TO FIND
A MESSAGE
THAT'S IN
ONE GUY'S
POCKET.

YOU HAVE
HALF A
SECOND.

IS SURVIVAL GUIDE · BOB LEWIS

Take the 'big' out of big projects: Break them into manageable chunks

MANAGEMENT SPEAK: The system has to be flexible.

TRANSLATION: We don't know what the hell we want.

This week's contributor has requested anonymity. We can all understand why.

Ambrose Bierce, the 19th century cynic, told of the inventor who built a flying machine. When the inventor started the machine, it immediately and quickly bored a hole straight to the center of the earth. Looping free, the inventor was heard to remark: "My invention was perfect in every detail. The problems were merely basic and fundamental."

Big projects are like that: They dig us all into deep holes, rarely fly, and, even when they're perfect in every detail, they often turn out to be flawed in basic and fundamental ways — the usual consequence of having implementation scheduled years after conception.

For some reason, everyone expresses surprise when IS projects come in late, over budget, and with fewer features than promised, even though that's by far the most common outcome. Because most new IS projects are based on client/server technology, we of course blame the technology, even though, as we saw last week, client/server projects fail neither more nor less often than traditional mainframe systems.

The complexity of project management increases exponentially with the size of the project. This means big projects need exceptional project managers. Unfortunately, exceptional project managers are hard to come by, and the deservedly command salaries that can make IS executives uncomfortable.

Next week, we'll look at the basic principles of managing big projects. This week we'll talk about how to avoid them in the first place, because most can be prevented. Here's what to strive for:

• **Small teams.** Don't put more than five people on a project team. Small teams mean low overhead.

• **Quick delivery.** Define projects no more than six months long. When a product is due in 180 days, the team feels a sense of urgency in the first team meeting. The project deliverable, by the way, should provide tangible value, not just something tangible.

• **Restricted user involvement.** End-users should define business processes and system functionality, not system design details. Get agreement on the pint up front, and then have frequent, informal contacts rather than formal interviews. Be highly interactive, and learn their business from them.

• **Staged releases.** Make your first release as small as you can. Set up two teams working on staggered schedules. Team One freezes its design three months after starting. Team Two starts designing the next release while Team One codes. Team Two freezes its design three months later,

while Team One installs its release. The benefit? You can successfully freeze the design, because it's easy to add new features to the next release. This gets you out of the trap of "scope creep" that kills so many projects.

• **High-productivity tools.** Delphi, PowerBuilder, Visual Basic, and their competitors all increase programmer productivity by a huge multiplier compared with Cobol or C++. Use procedural languages only when you have no other choice.

• **Simple user interfaces.** GUIs tempt programmers into showing off by building in lots of overlapping pop-up windows with cool interface widgets and fancy mouse action. Make your programmers experts in clean interface design.

Usually, when you're faced with a big, intimidating project, you can break it up into a series of overlapping, independent, small, manageable projects that match the above characteristics.

When you do, you'll experience several key benefits. Your projects will come in on time. You'll be able to track changing business requirements.

You'll also find yourself able to respond to changing company priorities, because you won't have committed all of your development resources to a single project for a long period of time.

Think small.

Correction

In my recent column on how accounting systems portray employees, I inadvertently inverted debits and credits. (See "To see the value of your employees, look beyond the numbers," April 22, page 74.) For the record, accountants credit cash and debit expenses for payroll transactions, crediting cash and debiting some other asset account for a capital purchase. My thanks to the dozens of readers who tactfully pointed out my error.

Bob Lewis is a consultant (but not on accounting issues) for Perot Systems Corp., in Minneapolis. Send e-mail to Robert.Lewis@ps.net, or post comments in his forum on InfoWorld Electric at http://www.infoworld.com.

Calendar

Technologically savvy team shares wealth with customers

■ Client/server cost-tracking system is guaranteed to save Baxter's customers millions of dollars

By Paul Karon

IT PEOPLE ARE OFTEN unpredictable affairs, but most managers would subscribe to the following truism: Good technology projects make your company a more efficient organization; a visionary technology implementation makes your company's customers more efficient.

One more platitude from the latest high-priced management consultant? Don't think it's applicable in the real world? Nothing wrong with a little skepticism. But what if a company, make that one of the country's biggest companies, proved otherwise? Let's take the tale of an ambitious project at Baxter Healthcare Corp., the medical projects giant based in Deerfield, Ill.

Two pools of managers at Baxter, IT professionals and business strategy executives, joined forces to create a client/server application designed specifically to woo customers by handing in-house IS tools over to them. With the tools, Baxter's customers can take the financial equivalent of an enterprise X-ray with an unprecedented accuracy.

It's an ability that health care industry executives need now more than ever. Because of a variety of pressures, the nation's health care industry is evolving at breakneck speeds. One of the primary outcomes of these changes is the emergence of a handful of giant integrated health care networks, huge vertically integrated cooperatives of health care providers that coalesce out of thousands of individual hospitals and medical groups into titanic purchasing centers of gravity.

To companies such as Baxter, which sell health care and medical supplies, these huge networks are of immense importance. Because eventually there will be simply so few customers left, the loss of even one of these customers is just this side of unthinkable.

Baxter's business strategies believe the health care networks of the future will be vertically integrated, full-service medical care providers whose goal will be to fulfill their customers' medical needs from the day they are born until the day they die. Organizations will be composed of everything from home health care to hospitals to outpatient surgery clinics. And tracking costs across these mazes of services will be critical to success. Attracting and then retaining these customers is the goal of Baxter's new Managed Care Tracking System (MCTS), a mission-critical cost-tracking system based on client/server platforms.

Baxter's deal-makers recognized that Columbia/HCA Healthcare Corp., a major health care provider, was one of these key clients. Baxter, of course, didn't want to see Columbia buying its supplies from somebody else. The strategy of attention? Baxter offered to give Columbia information systems that would save it hundreds of thousands, or millions (the amount is confidential), of dollars every year for eight years — or Baxter would write Columbia a check for the difference.

Not surprisingly, Columbia accepted Baxter's offer. You might call that the easy part: Somebody still had to come forward from within Baxter's IS department to make the project happen.

REIGN OF TERROR. The point man for the project, Chuck Smith, manager of IV systems managed care, approached Ken Kauppila, manager of strategic application development at information technology, and asked whether he thought he could create an information system that would enable Baxter to make good on the promise. Smith didn't want to sugarcoat the challenge, so he was careful to explain that it would have to save Baxter's clients millions of dollars or Baxter itself would have to pony up the difference.

Kauppila recalls being told something to the effect of, "We recognize that it's a big and difficult job, so if you feel you can't do it, we'll just hire an outside consulting firm."

Mysteriously, Kauppila agreed to put his head on the chopping block.

"There were not a lot of people signing up to do this," Kauppila says wryly. But the chance to enter into a high-profile devel-

KEN KAUPPILA, MANAGER OF STRATEGIC APPLICATION development in IT, used Blyth to create an IS infrastructure for Baxter's customers.

and Baxter's cost-cutting expectations. For competitive reasons, Kauppila will not disclose the exact amount the system saved, allowing only that it was "millions" of dollars.

MCTS enables Columbia's executives to look at their corporate use of products in a variety of views, by drilling down on either an institution-by-institution basis or a product-by-product basis across an entire company, according to Kauppila.

Features include Columbia transaction data integration, executive information systems, external market data integration, enhanced graphing capabilities, set standardization monitoring functionality, and facility key contact integration.

At first, the MCTS will run in Baxter's IV business, which sells about 2,000 products, including syringes, IV bags, and pumps. The IV business makes up about one-fifth of Baxter's overall revenue. The next step for the MCTS team, of course, is to move the system into other product lines in the Baxter enterprise, such as the surgical, renal, and biotechnology businesses and pharmaceutical dispensing machinery.

The MCTS data repository resides on twin mirrored Digital Equipment Corp. Alpha 2100 high-performance servers running OSF/1, a Unix system, on top of Oracle Corp.'s 7.2 relational database management software. The heart of the application, however, is a graphical, cross-platform application that was developed using Blyth Software Inc.'s Omnis 7.3 application development tool suite.

ALWAYS HAVE THE RIGHT TOOLS. The functionality of the Blyth tools was the key to

MCTS' success, according to Kauppila.

"We used Blyth Omnis primarily because of its cross-platform capabilities," Kauppila says, adding that Macintoshes and Windows-based PCs — about 1,000 of each — must coexist on the Baxter corporate campus.

"Other application development products we looked at always claimed they were cross-platform, but only Blyth really passed our tests," Kauppila adds.

From a business perspective, this cross-platform interoperability is critical, because Baxter must serve many different clients, each of which has a different IS environment. Baxter can't afford to choose technology that would cause it to lose any potential customers.

"The technology in this industry changes at such a rapid pace. We need to be able to port to any operating system database," Kauppila says. "For example, today we're using Oracle's database, but if we had to go to Sybase [Inc.], we could do so with minimal changes to the application."

Omnis includes a change management feature, which Kauppila credits for uncovering nothing less than the reason client/server systems fail in corporate environments: the difficulty of deploying finished client/server projects and maintaining them with updated features and fixes.

"We've totally automated our deployment," Kauppila says. "System changes are posted to the Oracle database, and, as clients dial in, we do an automatic check see if they have the latest version of the software. If not, the system offers to perform an automatic update."

"We've seen some phenomenal efficiencies with the Blyth software," Kauppila explains. "We have clinicians traveling all over the U.S., and if we had to FedEx update disks to them it would be a full-time job."

This way, Kauppila says, Baxter developers can focus on adding features to the system and not on the digital housework of keeping everyone updated with the latest versions.

But when the scalpel hits the skin, what has come to occupy the minds of health care providers now is not just medicine but matters of money and competition with other organizations. Managing costs is one of the largest components of this process.

Now that the effectiveness of MCTS has been proven, Baxter will market it to other health care companies, making it a permanent part of its competitive arsenal.

"This is no longer just an IT project," Kauppila says of the MCTS system. "This is a way of doing business."

Paul Karon is a free-lance writer based in Los Angeles.

GIVING YOUR CUSTOMERS THE GIFT OF IS

Whatever their business, when companies come care for a dwindling number of increasingly important customers, they must constantly seek ways to one up their rivals. Offering high-quality, industry-specific information systems and applications — such as Baxter's Managed Care Tracking System (MCTS) — is a powerful marketing tool, according to analysts.

"It's a very compelling way for a company to differentiate itself from competitors," says Michael Joseph, an analyst for International Data Corp. "These software applications can answer the question of how you add value for your customers."

Federal Express Corp., for example, separates itself from its adversaries with package tracking software that enables customers to log on to FedEx's Web site and check the status of shipped items.

Baxter's MCTS adds value for the company's customers, Joseph explains, not just by straight cost competition with other medical products suppliers but by helping its clients run their businesses better.

ment effort in conjunction with the business side of Baxter reassured Kauppila that the company was ready to see how far it could push the technology envelope.

In February of 1995, work on MCTS began. Just two months later Kauppila and his team were able to demonstrate that over time the system would meet and exceed Columbia's

management software. The heart of the application, however, is a graphical, cross-platform application that was developed using Blyth Software Inc.'s Omnis 7.3 application development tool suite.

C++ IDEs

The old-fashioned way

Compared to Java, a tried-and-true language such as C++ isn't very glamorous. But it's still the best way to build fast, robust Windows applications. And the new application frameworks make it easier than ever before.

Creating a killer application that is rich in features and capabilities (and runs in a graphical environment such as Windows) is no easy task. It takes a great deal of commitment in time, resources, and, in some cases, training. Hopefully, the investment pays off, and you not only produce a software package but a solution to a business problem.

To date, no tool is used more often than C++ to create the applications housed on your desktop — it is the pre-eminent tool for Windows development. Without a doubt, its beginnings were humble: It was a hacker's language that required you to crank out every bit of code by hand — in an ugly environment. A few years ago, C++ got a new set of clothes called an integrated development environment (IDE), which brought an editor, compiler, and debugger together in one package. Consequently, it helped developers turn out Windows applications with a commercial-quality user interface in less time than ever before. Since then, vendors have had time to streamline and enhance these products, producing mature, capable, and powerful development tools.

We compared four Windows-based C++ IDEs, three of which are market leaders: Borland International Inc.'s Borland C++ Development Suite 5.0, Microsoft Corp.'s Microsoft Visual C++ 4.0, and Symantec Corp.'s Symantec C++ 7.2. IBM recently released a Windows version of its popular C++ product, VisualAge C++ for Windows 3.5, which we also looked at. Powersoft Corp.'s powerful development tool, Watcom C/C++ 10.5, was left out, because its compiler targets non-Windows platforms out of one box. We felt that there was no appropriate place to give Watcom credit for its support of multiple platforms (and we weren't going to test it), so we reviewed it instead (see page 98). Each of the products we compared can target more than one development platform (Win16, Win32s, and Win32) and have powerful integrated editors, project managers, compilers, linkers, and debugging capabilities, along with tools to help you deploy your programs.

THE SOCKETS APPROACH. Perhaps more importantly, all of the tools we looked at have a capable application framework that reduces the code you have to write by including prewritten, pretested nuggets of code for you to reuse. Arguably, this promise of code reuse has spurred the growth of C++ as a development language.

If you have not already used one, application frameworks such as the Microsoft Foundation Classes (MFC) or Borland's Object-Windows Library deliver tremendous capabilities out of the box. Of

the two, MFC has become the standard for application development largely (and not surprisingly) because Microsoft licensed its framework more aggressively than Borland. Frameworks are aptly named because they create just the frame for your evolving application, with plenty of sockets into which you plug snippets of code that define what your application does.

Frameworks can instantly seem both daunting and limiting. The initial presumption is that the framework inhibits your ability to create original designs. Once past that concern, you might feel overwhelmed at the sheer size of the framework and knowledge you need to master it. You cannot, for example, use the framework in one application when you care to and avoid it other times. An entire application must choose to use it or ignore it. Using it means coming to understand all the nooks and crannies into which code can be placed. Yet despite their intricacies, application frameworks are a major advance in the way we develop complex programs, eliminating much of the tedium inherent to Windows development. The knowledge gained from using the frameworks effectively can be applied over and over again in new applications.

The development tools of several years ago had no such frameworks. If you wanted prewritten functionality, you were likely to turn to a third-party library developer from whom you could purchase specialized toolkits to handle communications or screen design, for example. Third-party toolkit developers still exist, of course, but their jobs today are a little harder because the number and size of gaps in the compiler's toolset have shrunk considerably.

IT'S IN THE BOX. More and more, C++ IDEs require less and less third-party support. Tools for resource creation, specialized container classes, and OLE support are now part of the compiler in the form of a resource editor, Standard Template Library, and ActiveX controls (formerly OLE custom controls). These add-ons aren't just limited to chunks of code. Specialized tools such as sophisticated debuggers and version-control systems have also found their way into the compiler.

Packing so many tools in one box is more than just a good value—it makes sense. In theory, all of these bundled tools work together better than they would if you tied them together yourself. However, all of this richness makes it increasingly difficult to compare these products on a level playing field. Naturally, it's easy to compare the speed and quality of their generated code. And it is not tough to make a subjective assessment of one tool's ease of use over another's. But there are features and benefits of each system that can't be compared to the others, because they are unique to just one or two tools.

For example, consider the Java support built in to Borland C++ VisualAge and Visual C++ have no such feature. (Symantec C++ had a patch for its compiler that could create Java applets but has since discontinued the patch in favor of a whole new product called Cafe. See Product Review, April 1, page 105.) Because Java support isn't integral to a powerful C++ development environment, we didn't score it. But if you want to begin working with Java, you may want to consider Borland C++; similarly, if you're looking for a compiler with distributed build capabilities, only Symantec C++ will work for you.

SPEAKING OF JAVA. Nothing since the introduction of Windows 3.x in 1993 has taken the industry by storm like the World Wide Web. Java, of course, is becoming the programming language of the Web. So if the future is indeed in Web-based applications, then the future of C++ is in question. There is no doubt that C++ will be around for a long, long time, but it's not clear how diligently vendors will maintain their existing IDEs. According to International Data Corp., the C++ market is already saturated, and the 5 percent of new programmers per year who would be potential C++ users are now faced with whether to learn Java instead. Corporations being what they are, if they believe Java is the programming language — and the Web the cash cow — of tomorrow, development resources will surely shift from C++ to Java. Because the Web (and its associated technology) is so new, however, one can only speculate about what will happen tomorrow.

C++, like everything, has its trade-offs: It's an overly forgiving language that often lets bugs slip by unnoticed, and the learning curve is difficult. But with C++ you can create stable, powerful, and fast applications. And despite the advanced browsers, design tools, and code watchers, nothing in any of this generation of IDEs makes C++ easier to learn.

We focused our testing on the core capabilities of these tools: how fast they performed, how well their application frameworks worked, how efficiently they recompiled an existing 16-bit application into 32-bit, and how well they handled project management. Because we can't possibly test every function and look at every feature, we suggest you carefully weigh your application requirements against the functionality offered by these products before you commit to any of them.

A guide to this comparison

OB6 The incredible, flexible IDEs These development environments give you a ton of ways to configure your project environments.

O95 The Unix factor: We look at SunSoft Inc.'s Visual WorkShop for C++ 2.3, an IDE for the Unix operating system.

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Results at a glance

development environment [IDE], making it easier to build a complete application and decreasing the need to rely on third-party tools. Since the IDE paradigm homogenized C++ development tools, vendors have been in a never-ending race to out-feature their competition. The result: In addition to application frameworks, all of these products sport a complete set of productivity tools (the number and type vary among products). But even though these products chase a lot of the same functionality, there are distinct differences among them that gave us a clear winner.

Specifically, Symantec Corp.'s **Symantec C++ 7.2** clinched first place, because it blazed through our benchmarks at almost twice the speed of its competition. In addition, it comes with a myriad of ways to configure your compiler and linker, supports Microsoft Foundation Classes and Borland's ObjectWindows Library, and comes with a full-featured debugger. As if that weren't enough, Symantec offers 90 days of free support (the longest warranty period of the bunch) and a 60-day money-back guarantee.

According to Symantec, there are several reasons why Symantec C++ is so fast: It takes advantage of Win32's memory-mapped files; its linker is entirely handwritten in assembly language, which means it is optimized to the processor level; the

The Score

7.5 Symantec C++ 7.2

7.1 Microsoft Visual C++ 4.0

6.9 Borland C++ Development Suite 5.0

5.9 VisualAge C++ for Windows 3.5

number of redundant header files in the library has been reduced; and, finally, the run-time library of the executable has also been hand-coded in assembly.

Microsoft Visual C++ 4.0, from Microsoft Corp., came in second place thanks to its impressive Project Workspace, which organizes your projects and their elements and maintains your preferences for the display of information. Visual C++ also has a well-thought-out debugger that supports conditional breakpoints, step-by-step execution, the capability to view variables and expressions, and a surplus of helpful tools. Visual C++ beat Borland C++ by a nose, primarily because it made recompiling an existing 16-bit application into 32-bit code very easy.

Borland C++ Development

Suite 5.0, from Borland International Inc., has some nice touches, such as being the only product to ship with Intersolv Inc.'s PVCS Version Control. In addition to its integrated debugger, it comes with Turbo Debugger—the original Windows debugger — and comes with 16- and 32-bit versions of Borland's CodeGuard. CodeGuard, when activated, traps common memory errors and reports them to you in real time. Similar to Visual C++, Borland C++'s mediocre scores in performance-related aspects, and price kept it from the No. 1 spot.

Despite its powerful feature set, you should not even consider IBM's VisualAge C++ for **Windows 3.5** unless you have a very powerful host system for it. Even with 24MB of RAM installed on our machine, it often ran so slowly when using some of its graphical tools that we wondered whether it was working at all.

There is, however, a lot to like about VisualAge — primarily Visual Builder, its tool for graphically constructing your application. It not only creates the interface portion of your program but handles much of its logic, too. Ironically, Visual Builder contributes to the poor performance of the environment, because it relies heavily on an interpreted language (rather than the usual compiled version). Finally, we were surprised by IBM's lack of support for this product. Free support is offered through this month; after that, all support must be paid for.

CONTRIBUTORS

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**Building a computer
is sort of like putting together
a jigsaw puzzle.**

**We just happen to make
our own pieces.**

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INFO WORLD

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– Scears Hardie
IS Manager
United Waste Service, Inc.

PRODUCT COMPARISON

C++ IDEs

	Weighting	Borland C++ Development Suite 5.0	Microsoft Visual C++ 4.0	Symantec C++ 7.2	VisualAge C++ for Windows 3.5
		Borland International Inc.	Microsoft Corp.	Symantec Corp.	IBM
		Scotts Valley, Calif.	Redmond, Wash.	Cupertino, Calif.	Armonk, N.Y.
		(800) 645-4559, (408) 431-1000	(800) 759-5474, (206) 882-8080	(800) 441-7234, (541) 334-6054	(800) 426-3333
		http://www.borland.com	http://www.microsoft.com/visualc	http://www.symantec.com	http://www.software.ibm.com
Performance					
Compiler and linker configuration	75	● Very Good ● $6.25 ○ B6	● Good ● $4.67 ○ 86	● Very Good ● $6.25 ○ B6	● Good ● $4.67 ○ 78
C++ code generation	175	● Very Good ● $13.125 ○ 86	● Very Good ● $13.125 ○ 90	● Very Good ● $13.125 ○ 90	● Excellent ● $15.00 ○ 90
Project management	75	● Very Good ● $6.25 ○ 94	● Excellent ● $6.25 ○ 90	● Satisfactory ● $7.50 ○ 90	● Very Good ● $6.25 ○ 90
Productivity tools	75	● Very Good ● $6.25 ○ 94	● Very Good ● $6.25 ○ 94	● Very Good ● $6.25 ○ 94	● Very Good ● $6.25 ○ 94
Debugging	100	● Excellent ● $10.00 ○ 94	● Excellent ● $10.00 ○ 94	● Very Good ● $5.00 ○ 94	● Satisfactory ● $5.00 ○ 95
Windows compatibility	100	● Good ● $6.50 ○ 94	● Very Good ● $5.50 ○ 94	● Very Good ● $6.50 ○ 95	● Poor ● $5.00 ○ 94
Performance	125	● Satisfactory ● $4.50	● Excellent ● $25.00	● Excellent ● $25.00	● Poor ● $3.25
Support and pricing					
Documentation	100	● Very Good ● $75.00	● Good ● $75.00	● Very Good ● $75.00	● Very Good ● $75.00
Support policies	50	● Satisfactory ● $25.00	● Satisfactory ● $25.00	● Satisfactory ● $25.00	● Satisfactory ● $25.00
Technical support	75	● Good ● $4.67	● Good ● $4.67	● Good ● $4.67	● Poor ● $3.25
Pricing	50	● Satisfactory ● $25.00	● Satisfactory ● $25.00	● Good ● $1.25	● Satisfactory ● $25.00
Final score		**6.9**	**7.1**	**7.5**	**5.7**

choic

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C++ IDEs

Compiler and linker configuration

■ Borland C++ Development Suite 5.0

VERY GOOD

Borland C++ has an extravagance of easy-to-use configuration options. However, it didn't receive a score of excellent because, similar to Visual C++, we were able to confuse the system into giving us cryptic error messages when we introduced conflicting build options.

Like Visual C++, Borland C++ applies default settings that depend on the project you choose. A well-implemented, outline-style dialog box, however, made it easy to change any or all of the large numbers of configuration options — including those for compiling, linking, and optimizing — for the module we were working on. If the module we selected was the .EXE program itself, our selection would be applied throughout the project. If, on the other hand, we had first selected just a single module in the project, our choices would be made for just that one part of the project.

Because there was no way to select several project modules and set options once for all of them, we were glad to see that Borland C++ provided an implementation of a style-sheet option.

Similar to its counterparts found in word processing programs, a style sheet is a named group of settings that can be applied in one step to a part of your project. Borland C++ includes several common style sheets such as Optimized for Speed and Optimized for Size. You can also create custom style sheets. Despite the steps style sheets save, you cannot, unfortunately, apply them to more than one module at a time. Like Symantec C++, Borland C++ targets Windows NT, Windows 95, Windows 3.1, and DOS from the same 32-bit IDE.

■ Microsoft Visual C++ 4.0

GOOD

Similar to all the products in this comparison, Visual C++ has a myriad of settings for controlling build-time operations. But it lost points because we couldn't easily target our application for a 16-bit environment.

You can choose from a range of project types; default settings are applied depending on the project. As with Borland C++, you can modify those settings using a multitabbed dialog box. It is at this point that you choose whether the project uses the Microsoft Foundation Classes (MFC) statically, dynamically (by relying on the MFC dynamic link library), or not at all.

You can also choose the level of warnings produced (out of four levels, the highest of which is the most picayune), linker and browser options, optimizations performed, and preprocessor definitions. You can also choose to include debugging data as well as insert custom tools into the build process for files that are not handled by the development system.

Unlike the other products that target 16- and 32-bit platforms out of the box, Version 4.0 of Visual C++ targets 32-bit Windows platforms only. For 16-bit development, you have to use Version 1.52c, which is included on 4.0's CD-ROM. This earlier version is, however, more than two years old and lacks many of the advanced features found in Version 4.0.

When we tried to confuse the system by introducing conflicting build information, Visual C++ was capable of detecting our tomfoolery and prompted us for appropriate corrective action. But occasional cryptic error messages that had little or nothing to do with our mistakes detracted from its score.

■ Symantec C++ 7.2

VERY GOOD

Symantec C++ has as many ways to configure the compiler as do the other products.

At this point in the configuration process, you decide whether to base your application on MFC code (Symantec licenses MFC, Versions 2.5 and 3.2, from Microsoft.)

There is a Target Options setting that lets you easily choose which operating

Borland C++, clicking on any given source file reveals its related classes and events.

system your application will work with. You can build programs for Windows 3.x, Win32s, Windows 98, Windows NT, and DOS. The system also supports DOS-X for building 32-bit DOS applications that rely on the Symantec DOS extender, which can be shipped with your application.

Compilation settings can be applied to projects as well as to individual files within the project. When inspecting individual files, we liked the Project Manager's method of allowing us to inherit settings from the project. We were also impressed with the way the system

Borland C++ treats everything as a graphical object. This screen lets you easily view relationships among objects.

prompted us before deleting intermediate .OBJ files that were built with settings different from those we recently set. We were able to set warnings to be treated as errors, as well as suppress specific warnings from being displayed. Just as important, we were able to choose which files in our project were to be compiled with debugging information included.

■ VisualAge C++ for Windows 3.5

GOOD

IBM has packed a lot of power and functionality into VisualAge — enough that its score in this category could easily have been excellent — but the miserably slow performance of the tools and environment caused us to lower the score.

Unlike its competitors, which share many common features, VisualAge is

very different, primarily because it keeps the core ingredients (such as the editor, debugger, and compiler) as separate components within the environment.

One thing it has in common with the others, however, is the concept of a project. Projects contain modules that make up your application. From the WorkFrame IDE, you can change the defaults for the settings used to create a project. These settings include a tremendous variety of options divided into notebook pages with tabs such as Listing, Debugging, and Processing. We were impressed with the breadth of the options sets.

Alternatively, you can use Work-Frame's BuildSmarts, which are essentially groups of common options bundled into a single name similar to Borland C++'s style sheets. In addition to the standard BuildSmarts for debugging and full optimizations, you can create your own.

VisualAge requires an inordinate amount of resources, and even then its performance, at times, can barely be considered acceptable. Like every other product in this comparison, VisualAge ships on CD-ROM. But unlike the others, running VisualAge from the CD-ROM is too slow to be practical. Even with all 33MB installed on our test computer — a 90-MHz Pentium PC with 24MB of RAM (IBM says 16MB is required, 24MB is recommended) — VisualAge occasionally ran so slowly that we questioned whether it was still working at all. In some cases we used the command-line programs to accomplish a given task simply to avoid having to use the graphical tools because they were particularly slow.

C++ code generation

■ Borland C++ Development Suite 5.0

VERY GOOD

The primary difference between Borland C++, Visual C++, and Symantec C++ is that Borland C++ generates code based on Borland's Object-Windows Library (OWL), not Micro-

soft Foundation Classes (MFC). Although support for MFC-based programs debuts with this version of the compiler, this feature is geared toward developers who already have MFC-based programs that they want to migrate to Borland C++.

Projects begin in Borland C++ either using the AppExpert (which works a lot

like the helpers found in Visual C++ and Symantec C++) or from scratch. Making a class accessible via OLE automation is fairly easy to do with Borland C++. The supplied ObjectComponents Framework cuts much of the complexity involved with implementing other OLE capabilities.

The integrated resource editor is ser-

viceable but lacks specialized editors for handling string tables, version information, and accelerators. For these you're relegated to using a Notepad-like editor. More disturbing, however, is Borland C++'s visual support for Visual Basic custom controls but not ActiveX (formerly OLE custom control) components.

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PRODUCT COMPARISON

■ Microsoft Visual C++ 4.0

VERY GOOD

Visual C++ generates a framework with a powerful tool called App-Wizard. Unfortunately, AppWizard is a one-time-only tool. You cannot use it to change a fundamental aspect of your program once it's been created.

A project starts in Visual C++ Developer's Studio, where you choose from many project types: an application designed initially by AppWizard applications written from scratch; DLLs; console applications; and ActiveX controls.

AppWizard applications start their lives as skeletons to which you add the code that makes your application unique. The wizard interface walks you through a series of questions that affects the generated code. You can also create programs from the dialog box. Not surprisingly, Microsoft's system includes extensive OLE support (container, server, or both, as well as the capability to host ActiveX controls or provide for OLE automation). In addition, though AppWizard is capable of creating the

general skeleton, many simple modifications require extensive handwritten code.

■ Symantec C++ 7.2

VERY GOOD

Given its reliance on MFC, it shouldn't be too surprising that Symantec C++ mimics the operation of Visual C++ almost completely. It also supports Borland's OWL.

> VisualAge lets you view the contents of a source file. It is not, however, as well-organized or easy to read as the other products

Similar to Visual C++, Symantec C++ projects can be started from scratch, or they can be based on code written by the compiler's AppExpress tool. Because AppExpress generates code based on

MFC 3.0, roughly the same options exist for the compiler's code generation as for Visual C++. Symantec goes an extra step forward, and generates a skeleton help file, too.

Connecting visual elements of the interface to the application framework is accomplished through the ClassExpert tool, which operates similarly to Visual C++'s ClassWizard. Essentially, you select items from your interface and choose to add, edit, or delete C++ functions that relate to specific messages passed from Windows to MFC. Adding code to a push button was as easy as double-clicking on the appropriate message shown in Class-Expert.

■ VisualAge C++ for Windows 3.5

EXCELLENT

VisualAge outscores its competition here because Visual Builder—the tool used to graphically construct your application—not only creates the interface portion of your program but handles much of its logic, too. The process typically starts with a series of graphical objects arranged on a form

similar to what is done with Microsoft's Visual Basic or Borland's Delphi. Categories of control types appear in a graphical list box along the left edge of the screen. Selecting a category leads to

> VisualAge's powerful Visual Builder not only lets you create an interface effortlessly, but it also generates the code necessary for the interface to function.

a list of controls in an adjacent list box. You select a control from this second list, then drop it on the form you are designing.

Even more impressive is the way you connect controls, drawing lines from one to the other. These lines represent messages passed between controls and how the receiving control should respond to it. The code generated by Visual Builder relies heavily on the IBM Open Class Library, which includes support for creating OLE clients as well as servers.

Project management

■ Borland C++ Development Suite 5.0

VERY GOOD

Borland C++'s ClassExpert works fine for managing projects, but it is not as easy to use or as capable as the Project Workspace window in Visual C++.

Borland C++ comes with a decent browser for getting around code, although you may find yourself using the ClassExpert once you are familiar with the project's code. ClassExpert has three panes, with classes and events split across the top and the code that implements each event shown in the bottom half of the window. This makes it easy to view existing classes and add new classes, edit headers associated with them, and add event handlers.

The Development Suite edition of Borland C++ is the only product that actually ships with a third-party version-control system. In this case, it's Intersolv Inc.'s PVCS Version Manager.

■ Microsoft Visual C++ 4.0

EXCELLENT

Visual C++ comes with a useful browsing tool, although we found the Project Workspace even better for maneuvering around our code. And, unlike the browser, Project Work-

space requires no separate generation step. The Workspace view is particularly useful because it frees you to concentrate on how classes are interrelated so you don't have to worry about where they're stored. Right-clicking on a class leads to a menu where you can choose to add new class variables and functions. You can also jump to definitions and uses of the existing class members.

Unlike earlier versions of the compiler, the system no longer supports the capability to build and manage the settings of code groups within the Project

> The Process Viewer is Symantec C++'s only much like Visual C++'s Spy++. Thread information and processor times are reported.

Manager. Users upgrading to Version 4.x should be aware of this limitation and plan to work around it.

Visual C++ does not come with a

version-control system; however, a third-party system can be integrated as long as it adheres to the Microsoft Common Source Code Control Interface.

■ Symantec C++ 7.2

SATISFACTORY

Symantec C++ ships with two seemingly identical IDEs for targeting 16- or 32-bit operating systems, but upon closer inspection we found some glaring and odd differences.

Although a version-control system does not come with Symantec C++, the

compiler's 16-bit development environment can hook into Intersolv's PVCS Version Manager (purchased separately) through the environment's menu structure. We found it very strange, however, that this capability is not available to users of the 32-bit version of the environment.

Also, we couldn't get our subprojects

to work in the 32-bit environment. This peculiar behavior is unfortunate because the project management window does make it easy to visualize projects and their constituent files and settings.

■ VisualAge C++ for Windows 3.5

GOOD

VisualAge's management tools are not as well-thought-out as those of Borland C++ and Visual C++.

The development environment for VisualAge is called WorkFrame. Like every product in this comparison, WorkFrame manages your code projects. The file name for each module in the project appears next to a distinctive icon in WorkFrame.

You can filter the displayed selections by entering criteria, but even though the Project Manager can handle multiple targets, there is no nesting in the display that prevents you from seeing file dependencies.

Objects can begin based on fully working template projects that ship with VisualAge. These templates are part of ProjectSmarts, which is launched whenever you create a new project. You can choose from several project types that implement common features, then customize these with your own changes.

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C++ DLLs

Productivity tools

■ Borland C++ Development Suite 5.0

VERY GOOD

Like all the other products, Borland C++ comes with plenty of tools that make life easier on the developer.

It includes WinSight, which monitors classes and windows throughout the system (and the messages passed between them); WinSpector, which traps the Uninterruptible Application Error when a program crashes; and utilities such as Buildsym, which enhances what is returned by WinSpector. But many of these utilities come in command-line versions only.

Unique to this version of the compiler is the cScript language for modifying the development environment. With cScript you can access major IDE subsystems, adding new features or modifying existing ones. Because much of IDE functionality is developed with cScript, we were able to view the loaded scripts and use them as the basis for new scripts.

■ Microsoft Visual C++ 4.0

VERY GOOD

Many of the tools that were formerly part of the Windows Software Development Kit (SDK) are included with Visual C++, such as Spy++ and WinDiff. There's also the Microsoft Profiler and an integrated version of the Control Development Kit, which contains class libraries that aid in the creation of ActiveX controls (formerly OLE custom controls). Version 4.0 now includes the Game SDK and the Internet Server API Extension Wizard. The latter generates skeleton applications that you can customize into whole Internet server extensions.

Rather than just allowing you to use

Setting your project environment is a snap in Symantec C++'s Project Express. Simply print and click.

AppWizards, Visual C++ goes one step further to let you actually create new ones. This can be especially useful for development shops that want to tweak or even make major

modifications to the default application code generated. For instance, you could change the default AppWizard to use a corporate standard for forms that include specialized password dialog boxes for your database server.

■ Symantec C++ 7.2

VERY GOOD

Beyond the usual complement of tools, such as HeapWalk, Spy++, DDE Spy (a tool to view current running objects), Stress, WinDiff, and so on, Symantec licensed many other useful utilities from Microsoft and put them in the box along with some of its own. The tools range from genuinely useful, such as those that watch for Messaging API and Microsoft-Intel Telephony API calls, to simpler ones, such as Bits and Flags, which presents 32-bit values in the form of check boxes.

The compiler's unique source-code parsing tools make it possible to view

the structure of your classes graphically before compilation. You can also manipulate the classes through drag-and-drop, although the usefulness of this capability is dubious at best. You can use Symantec C++ to create ActiveX controls, but, unlike Visual C++, the compiler does not ship with the Control Development Kit. You will have to purchase it separately.

■ VisualAge C++ for Windows 3.5

VERY GOOD

IBM also licenses Microsoft's SDK tools. Consequently, its set of productivity tools is similar to all of the other products. And, like Symantec C++, it adds some tools of its own.

VisualAge includes the DataObject Viewer, Object Viewer (an OLE object viewer), and a performance analyzer.

VisualAge's powerful browser also has tremendous capabilities. Of particular note is its capability to work in an outline list and graphics mode. Furthermore, you can load not only your program classes, but those of the supplied class libraries as well. This helps cut the complexity of understanding these very complete class hierarchies for interface design, collections, and OLE support.

Debugging

■ Borland C++ Development Suite 5.0

EXCELLENT

Like Visual C++, Borland C++ has a well-thought-out debugger that comes with plenty of useful tools. Borland C++'s integrated debugger is quite capable, and the product still

Visual C++ lets you set warning levels, which make it easier to debug your code.

ships with Turbo Debugger. Edit windows now have a gutter in which several different debugging icons appear, such as those for breakpoints, current execution line, and even where execution has already passed through. The integrated

debugger supports multithreaded programs as well as exceptions thrown in by C++ or the OS.

The best thing about Borland C++'s compiler is its support of a vast array of breakpoint options, wrapped up nicely in a concise dialog box. Flexible, conditional breakpoints are available for a wide range of possibilities. Other debugging views include the call stack, variable inspectors, the process view for watching threads, and the multipaned CPU view, which displays the assembly instructions that make up the running program, the CPU registers and flags, and the stack. DLLs are entered transparently with no added programmer steps.

Enhancing the debugging capabilities of Borland C++ are 16- and 32-bit versions of CodeGuard. When activated, the CodeGuard manages to trap common memory errors, such as buffer overruns, and reports them back as they happen. For-

Visual C++ lets you track down errors, processes, windows, and more, using its Spy++ tool

get about using CodeGuard for the odd DOS-based project, because it only works with Windows.

■ Microsoft Visual C++ 4.0

EXCELLENT

In addition to the standard set of debugging tools (conditional breakpoints, step-by-step execution, and the capability of viewing variables and expressions), Visual C++ includes support for more innovative debugging capabilities, which, all told, gives Visual C++ a perfect score in this category.

One of the more helpful debugging tools is DataTips, which is very similar to tooltips. But rather than pop up an explanation of what a toolbar button does, DataTips shows you the value of

a variable or expression whenever you have the cursor resting on it.

The debugger also includes separate views for registers, source code disassembly, call stack, and memory. We really liked the way the variables window works: If displayed the value of variables in the current statement and in the statement most recently executed.

The collapsible outline format of the display is sometimes too crowded; however, the ideal amount of information is delivered in most cases.

Although Visual C++ supports a variety of useful breakpoint types (based on location, message received, and changed data expressions), we found its placement on the Edit, rather than the Debug, menu to be weird.

DLL Debugging is supported, even for those loaded dynamically, although you have to specify its name before starting the debugging session.

Additionally, there is built-in support for debugging multithreaded applications. And finally, Visual C++ also let us

Symantec C++ 7.2

VERY GOOD

Symantec C++'s debugger, which descended from the powerful Multiscope debugger, is full-featured and very capable. It works with both DOS and Windows programs, although it lacks some of the fancier conditional breakpoint capabilities of Borland C++ or the useful DataTips of Visual C++.

Symantec C++'s debugger does come with some unique features of its own. Specifically, a Graphic Data window, which can represent complex data

view and suspend individual threads of our application.

structures graphically, showing, for example, the links that exist between nodes of a linked list.

The debugger's Function list shows the functions defined in your program along with their file location, address, and return type. In addition to setting breakpoints on a given routine, the Functions list also makes it easy to navigate through your code. We had no difficulty using the Symantec C++ debugger to examine DLLs. A Debugger Settings dialog box allows you to choose which DLLs will be entered during a debugging session. You can choose all DLLs or name specific ones for processing. The debugger also supports breaks on OS exceptions.

VisualAge C++ for Windows 3.5

SATISFACTORY

Like other aspects of this product, VisualAge's debugger looks and feels different than the debuggers in the other products reviewed here, but much of the capabilities are the same. It didn't score as high as the others, however, because debugging Windows 3.x projects is convoluted.

Debugging applications running on Windows 95 and Windows NT is a relatively straightforward process. But because the VisualAge debugger requires a 32-bit host operating system, you have to debug Windows 3.1 applications remotely. To handle this, VisualAge

ships a separate debugging probe module that runs on computers using Windows 3.1.

The debugger itself communicates with the probe via a TCP/IP connection. On top of the additional setup required for this process, we also had to set up seven more environment variables, which expanded our environment by 20,000 bytes to accommodate the 25 or more variables VisualAge had already added to our system. Why IBM continues to rely on the environment so heavily is mysterious.

There are several limitations when debugging Windows 3.1 code, including the debugger's incapability to halt a running program.

Windows compatibility

Borland C++ Development Suite 5.0

GOOD

Recompiling an existing 16-bit Windows application in Borland C++ was easy. Like Symantec C++, we simply had to open a new project, change the target platform, and rebuild the application. We liked the fact that Borland C++ let us select which class library we wanted as a framework in our project, such as Microsoft Foundation Classes, ObjectWindows Library, or ObjectComponents Framework. Using the same framework for both applications made it easier to maintain our original application.

Microsoft Visual C++ 4.0

VERY GOOD

Considering the fact that Microsoft wrote the Windows API, it's not surprising that Visual C++ did well in this category.

When we opened our old project in Visual C++, we were prompted with a message asking if we wanted to convert the application into a 32-bit application. When we chose yes, our project was automatically converted. We then saved the new project to another directory with a different name. Again, however, Version 4.0 of Visual C++ won't allow you recompile in a 16-bit environment.

Symantec C++ 7.2

GOOD

Symantec C++ easily and seamlessly recompiled our existing application into 32-bit code. All we had to do was open a project, change the target platform to Win32s, and rebuild it. Our saved program was bug-free and didn't require any modifications or changes to the source code.

VisualAge C++ for Windows 3.5

POOR

The application rebuild process in VisualAge required more work than any of its competitors.

The first time we compiled our existing application, we got a number of error messages. We checked the error message manual provided with VisualAge, which stated that the errors were caused by an internal compiler error; it recommended we call a product representative.

But after further investigation, we found that most of the errors were caused by a standard Windows API function that uses lowercase letters. VisualAge uses capital letters. For example, if the function in Windows is _export, before VisualAge can read it, it must be changed to _Export.

This problem took 2.5 hours to research and solve.

AN IDE FOR THOSE IN A UNIX FRAME OF MIND

By Yan P. Wang

Similar to the other C++ IDEs in this comparison, SunSoft Inc.'s Visual WorkShop for C++ 2.1 provides developers with a GUI development environment and a set of productivity tools for the Unix environment. Unlike Windows-based IDEs, though, it lacks intuitive project-environment configuration tools.

Most of the Windows-based IDEs can create a project framework based on a developer's preferences. In Work-Shop, projects must be created from scratch. We could not fully configure a project environment, such as specifying the type of application a project would be or which class library to use. However, we could control the application build environment through a makefile — an approach that has its benefits and drawbacks.

A makefile does not limit you to compiler or link commands: It lets you use any Unix commands. This is something that allows experienced developers to control how an application is built, as well as stipulate which housekeeping chores are done when: before, during,

or after the building of an application. The problem with using a makefile is that you must know all the complicated and sometimes confusing compiler and link commands.

We were impressed by WorkShop's Sparcworks/Visual, a graphical user interface designer for Motif. Creating interfaces with this tool is very straightforward; we found the intelligence behind the widgets very helpful. For example, after we placed a widget on a worksheet and selected it, only the widgets that work with the selected one are highlighted on the widget palette. Widget definitions can also be modified. Based on the interfaces that we created, Sparcworks/Visual was capable of generating C, C++, and X resources source codes. Furthermore, we were able to modify and merge the generated code with our application.

We did not like the fact that there is no designated editor for editing source code in WorkShop Manager. We had to use the system editor through the command tool.

Fortunately, instead of exiting Work-Shop Manager to open the system editor, we could link it with WorkShop's

application tool and open it in the WorkShop Manager. Once we were able to link any .EXE files with the application tool and use them as one of the tools in WorkShop, though only one application at a time.

A good debugger is valuable in a C++ IDE environment, no matter what platform it runs on. Work-Shop's debugger neither disazzles nor disappoints. It contains the basic functionality that you would expect in a debugger, and it is customizable. However, we thought that defining the Debugger Function Setup was not intuitive.

We found WorkShop's performance tools (Analyzer, Thread Analyzer, and Looptool) useful. These tools can detect a bottleneck in a program and track time spent on a given thread or loop. Most of this analysis can be shown in graphical form on the screen or printed in reports. We found the reports to be

clear and easy to understand.

WorkShop also provides tools for team development, albeit basic ones, such as version control, merge files, and so on. But we found some of the inter-

faces for the tools confusing and difficult to use.

Despite its faults, we recommend SunSoft's Visual WorkShop for C++ 2.1 for Unix environment developers.

SunSoft is a subsidiary of Sun Microsystems Inc. and is based in Mountain View, Calif. SunSoft can be reached at (800) 786-7638 and via the World Wide Web at http://www.sun.com/sunsoft.

To design a user interface in SunSoft Inc.'s Visual WorkShop for C++ 2.1, just drag and drop widgets from the template onto a project workspace.

HOW WE TESTED

THE LAST TIME we evaluated C++ IDEs (see Product Comparison, April 4, 1994, page 70), they had just hit the market with the promise to make a substantial increase in productivity. Our test plan was designed to evaluate how well they kept that promise. That was decades ago, by computer industry standards, so we've revamped our test plan to focus on what is important about the latest batch of 32-bit C++ IDEs: application frameworks, project management, and performance.

PERFORMANCE

Compiler and linker configuration

Compilers have options in common, but the number, nature, and presentation of them are strong differentiators between products. The more flexible a product is and the easier it is to set the compile and link options, the less time a developer spends tweaking the compiled application. We set up an environment that best fit our project by excluding some warning messages, enforcing ANSI compatibility with the compiler, and defining the compiler output directory. To receive a score of

satisfactory, a product had to allow fine-tuning of compile and link options, compile for a target operating system, and come with reasonable defaults in the option dialogs. We also expected a product's compiler to conform to the emerging ANSI standard. We gave additional points to products with exceptional user interfaces, including those with quick overviews of the possible setup options, define and store configurations, and the ability to select a different class library for each project. We also gave bonus points to a product if it supported Microsoft Foundation Classes. We lowered a product's score if the compile-time and link-time messages were misleading or useless, or if targeting the operating system of our application was convoluted.

C++ code generation

These products should be able to automatically generate the basic framework necessary for any Windows application, thus eliminating the need to crank out the code by hand.

We started this test to select items necessary to our application,

creating a user interface that included toolbars, menu items, and dialog boxes. We then modified the user interface and generated source code to see how the product handled change.

At a minimum, we expected a product to quickly and easily build a skeleton application complete with a specific user interface and intuitively handle message mapping between user interface elements and handler functions. We added points if the tools provided were particularly user-friendly and robust, and if on-line help was available for each option or process. Code generators that automatically modified the generated code after a user interface element changed or gave us complete control of the look and feel of the application (with colors and size) also received bonus points.

Products that could generate skeleton applications, but only provided limited functionality for doing so or had no support for platform-specific functions such as OLE or ODBC, received a lower score.

Project management

Because developers often handle multiple projects (with different requirements and restrictions) at one time,

version control can be a nightmare. A well-designed project management tool releases the developer from tracking project requirements manually.

A score of satisfactory went to products that provided a basic project editor that allowed initial specification of constituent files and targets, as well as later modification. We also expected there to be visual representation of files and dependencies, and a close-oriented source-code browser. Products that had hooks to a third-party version control system (or came with their own), could hunt down dependencies independent of the user, or came with source-code navigation capabilities were given a higher score. Additional points were also awarded if there was support for external makefiles.

Productivity tools

There's no point to building an application if your users don't take advantage of it. If an application is slow, ugly, or difficult, they won't use it; they'll avoid it at all costs.

These products come with a set of tools that help ensure your application does not end up in a virtual trash bin. They do certain tasks such as check your memory requirements, compile statis-

Benchmarks

32 bit C++ IDE performance without optimization

Even though we didn't score these results, you might find them useful. During the development stages of your application, it's likely you will compile your code to check it for bugs. When you do this, you won't want to employ the optimization features of the product, because this gets rid of the debugging capabilities — defeating the purpose of compiling your code in the first place. Again, all of the products were faster on Windows NT: VisualAge was more than 1.5 minutes quicker.

Windows NT

Times in minutes: seconds

	Compile	Link	Execute
Borland C++ Development Suite 5.0			3:54
Microsoft Visual C++ 4.0			2:08
Symantec C++ 7.2			2:08
VisualAge C++ for Windows 3.5			4:49

Windows 95

Times in minutes: seconds

	Compile	Link	Execute
Borland C++ Development Suite 5.0			4:17
Microsoft Visual C++ 4.0			5:26
Symantec C++ 7.2			3:24
VisualAge C++ for Windows 3.5			6:28

Benchmarks

32 bit C++ IDE performance with optimization

You'll want your executable to be as fast as possible; therefore, your final build will use the optimization features of these products. No product came close to beating Symantec C++ in these benchmarks, primarily because Symantec C++'s linker and run-time library of the executable are entirely handwritten in assembly language (in other words, it's optimized to the processor level). All of the products performed significantly better on Windows NT than on Windows 95. Notably, with the exception of VisualAge, Visual C++ was the slowest product on Windows 95.

Windows NT

Times in minutes: seconds

	Compile	Link	Execute
Borland C++ Development Suite 5.0			4:48
Microsoft Visual C++ 4.0			4:11
Symantec C++ 7.2			2:24
VisualAge C++ for Windows 3.5			4:51

Windows 95

Times in minutes: seconds

	Compile	Link	Execute
Borland C++ Development Suite 5.0			5:28
Microsoft Visual C++ 4.0			7:24
Symantec C++ 7.2			2:43
VisualAge C++ for Windows 3.5			4:31

Up-to-the-minute sports scores would have gone here.

Buying and selling stock in real-time would have gone here.

Booking your own vacation including plane tickets, hotel room, and beaches. Then seeing it all, would have gone here.

Ability to test-drive a car like you're actually in it would have gone here.

We'd have shown you how you can bring the Web to life but then this is just a piece of paper.

Ability to interact with a novel would have gone here.

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tics on the number of times certain elements of your code are executed, or compare the differences between files and projects. At a minimum, a product had to come with a fair number of productivity tools that could be launched through the IDE. From there, we raised a product's score as the number and usefulness of the tools increased. We lowered a product's score if the tools provided were not useful, or if there was only a minimum number provided.

Debugging

Talk about debuggers at your next dinner party and you just might put everyone to sleep. Let's be honest; it's not the most fascinating technology in the world. However, it just might save your code, and it is one of the few constants in these environments. But the power, usefulness, and implementation differ between products. In this category, our goal was to show the strengths and weaknesses of each product's debugger.

To receive a score of satisfactory, a product had to let us insert breakpoints into the code, as well as delete them, so we could execute it step by step. We raised its score if a product not only let us view variables, but let us change their values, count class execution time and memory used, step out of functions, and step through (or switch between)

multiple threads. If a product could handle ActiveX controls (formerly OLE custom controls) and let us step through DLL code, or if it came with any unusual or outstanding features, we gave it bonus points. If the debugger came with limited functionality, we significantly lowered the score.

Windows compatibility

The advent of Windows 95 makes the need for 32-bit applications the norm rather than the exception. It also makes the capability to seamlessly recompile an existing 16-bit application into 32-bit code essential. To receive a score of satisfactory, we expected a product to recompile with no major changes necessary to the source code. If a product only required us to change the target operating system in the old project directories, or if it didn't require any modifications at all, it earned bonus points. Points were deducted if errors occurred during recompilation, or if we had to rewrite a significant amount of source code and change definitions.

Performance

We enabled each product's optimization features and timed how long it took to compile, link, and execute our application running with both Win-

dows NT and Windows 95. We then averaged the results to produce a performance rating.

To receive a score of satisfactory, a product had to complete the speed tests in 4 minutes 45 seconds to 5 minutes 44 seconds. We gave a score of good if the tests were completed between 3 minutes 45 seconds and 4 minutes 44 seconds. We gave a very good if the completion time was between 3 minutes 44 seconds and 2 minutes 45 seconds. If a product completed the tests in 2 minutes 46 seconds or faster, it received a score of excellent. We gave a score of poor to products that took between 5 minutes 45 seconds and 6 minutes 44 seconds to complete the tests. If a product took more than 6 minutes 45 seconds to complete the tests, it received a score of unacceptable.

SUPPORT AND PRICING

Documentation

To receive a score of satisfactory, the documentation had to provide thorough, accurate information on all of the product's basic functions. We gave extra points if there was a thorough online tutorial, on-line help, a quick-start guide, or a technology overview. Errors, outdated or missing information, poor organization, and a lack of a table of contents lowered a product's score.

Support policies

In order to earn a score of satisfactory, a vendor's support policies had to include some period of free support and at least one alternative to the phone: a CompuServe forum, an Internet site or e-mail, a fax service, or a private BBS. We raised the score if there was a toll-free support line, a money-back guarantee, or support hours that exceeded 10 hours per day or included weekends.

Technical support

The technical support score was based on the quality of service we received during anonymous calls to the vendor. We expected to receive prompt, courteous, and correct answers. We gave additional points if a technician offered helpful tips or made follow-up calls to ensure that our problem was fixed; we deducted points for incorrect answers, unreturned calls, or long waits on hold.

Pricing

The pricing score reflects the cost of the package and takes into consideration the competition and the intended market. The score is not a reflection of the product's overall value, nor do we consider performance or other added features when we assign a score.

It's in there: Watcom's powerful compiler targets multiple platforms

By Robert A. DeRossi

Watcom C/C++ 10.5, from Powersoft Corp., is the portability superstar of C++ development tools. Ironically, it is this extendability that kept it out of this Product Comparison. In order to compare the products on a level playing field, we decided to include products that target Windows-only platforms.

Watcom, on the other hand, can generate native code for 16-bit DOS, 32-bit extended DOS, Windows, Windows NT, and OS/2. As if that weren't enough, it can also create NetWare Loadable Modules (NLMs), which are essentially programs for Novell Inc.'s NetWare OS. Also bundled with the compiler are graphical tools for browsing, debugging, and profiling programs.

We were very impressed with the power and the flexibility of Watcom's compiler. Long regarded for its highly optimized output, Watcom's attention to details and the far-reaching support of its tools make it an essential part of any purchasing decision.

With Watcom it hardly matters which platform you use for development. Cross-platform support allows you to compile on one target and deploy your work elsewhere. You can choose to compile using anything from the lowly DOS command-line tools to full-powered IDEs for all flavors of Windows or 32-bit OS/2. There are even command-line tools for the graphical environments, should you care to use them with your own GUI editor.

Watcom's IDE eschews the conventions

set by other development systems. Rather than roll all its tools into a massive program, Watcom spawns its programs as separately running executables. The result is a system that has less homogenous integra-

Although Watcom's IDE may not be up to the standards set by rivals, those same competitors can't touch Watcom's extensive support for diverse OSes.

tion, but works consistently with. Same tools, such as Watcom's source editor, have a toolbar button that flips you back to the IDE with a single mouse click.

There are no wizards or experts in Watcom. A new project starts with the definition of one or more targets. During its definition, you tell the system what the target will be by choosing the target environment from a list of radio buttons, then choosing the image type that's appropriate for that target. For example, if you chose Win32 as the target environment, you can choose a character mode .EXE, a windowed

.EXE, a DLL, a library, or a help file for the image type.

To compensate for the lack of a wizard system of its own, Version 10.5 ships with Visual Programmer 2.02, from Blue Sky Software Corp. Visual Programmer's environment allows you to draw an application and add a lot of functionality. It then generates the necessary Microsoft Foundation Classes (MFC) source code. Unlike other wizards, you can use Visual Programmer iteratively, adding or modifying functionality to the visual model you create, then regenerating the source code.

Files of licensed add-ons account for Watcom's well-rounded feature list. Along with MFC (Version 2.5 for 16-bit programs and Version 3.0 for 32-bit programs), Watcom comes with its own royalty-free 32-bit DOS extender and container classes. Watcom includes components of the OS/2 2.1 Toolkit, as well as full API libraries for Windows 3.1, Windows NT, Novell's NLM Software Developers Kit 4.0, and the SOMObject's Developer Toolkit for OS/2. The system now compiles programs based on the MFC, too.

All of this is not to say that Watcom is perfect. Similar to earlier versions, the design of this edition's development envi-

ronment is quirky, at best. On-line help files, though complete, are sloppy. Some dialog boxes, such as the one used to set font preferences for the source editor, have no OK or Cancel buttons. It took us awhile to realize that our preferences could be set only by dropping the sample font text from the modeless dialog box to the editor screen beneath it. Colors and status-bar items are set in a similar fashion, though occasionally there is no instructional text to explain what to do. Clearly, 05/2 users will feel more comfortable with this environment than Windows and DOS users.

These specific complaints aside, the entire system lacks the kind of cohesiveness that is a hallmark of products such as Microsoft Corp.'s Visual C++ 4.0 and Borland International Inc.'s Borland C++ Development Suite 5.0. Users who have come to appreciate the tight integration of tools will rue the way Watcom's IDE spawns the tools used. Users who like to mix and match programming tools won't find this setup as disquieting.

Despite the sometimes cramped or awkward design, C/C++-compiler purchasers can't be taxed too heavily on these issues; Watcom is still a premier choice for applications development. The full development package costs $350. A competitive upgrade is available for users of Borland C++, Visual C++, or Symantec Corp.'s Symantec C++ products for $199. Powersoft, based in Concord, Mass., can be reached at (800) 395-3525 or (519) 886-3700, and at http://www.powersoft.com.

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Upcoming in InfoWorld

MAY 20 ENTERPRISE *FEATURE:* Communications and computers continue on a collision course, with more and more vendors looking to deliver telephony tools to PC users. We'll survey the current crop of applications and see if they are starting to deliver on the promises of telephony vendors.

PRODUCT COMPARISON *APPLICATION SERVERS:* Application servers are the heart of any company that relies on processing information. We look at four machines with four different architectures to see how well each can handle the job: Advanced Logic Research Inc.'s Revolution Quads X6i 5/12, Compaq Computer Corp.'s ProLiant 4500 5/166-2, and Polywell Computers Inc.'s Poly P6-200PS and PolyAlpha 333A.

MAY 27 ENTERPRISE *FEATURE:* When the Internet boom happened, a surprising number of big players missed the boat. What are they doing now to regain their footing? Will old strategies designed to control the standards and direction work, or have the ground rules changed? We'll take a look at the players and see if their strategies will fly in this brave new world.

IN FUTURE ISSUES ENTERPRISE *FEATURE:* The year 2000 problem poses a clear and difficult challenge to mainframe shops, but what work will be involved to make sure client/server systems make a smooth changeover? We will look at how client/server systems will be affected and what you need to do to be prepared.

PRODUCT COMPARISON *GRAPHICS WORKSTATIONS:* The graphics workstation market has been very active in the past few months. Workstations based on Intel Corp.'s most powerful microprocessor, the Pentium Pro, are trying to shift the balance of power in this growing market but face stiff competition. We test and compare seven recently introduced graphics workstations: Digital Equipment Corp.'s Alpha XL 366, Netpower Inc.'s Calisto, the Dimension XPS Pro 200n from Dell Computer Corp., the Indy RS000 from Silicon Graphics Inc., Intergraph Computer Systems' TD-300, the Power Macintosh 9500/150 from Apple Computer Inc., and Power Computing Corp.'s PowerTower 180.

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▸ Windows collaborative software development support system

A version-control star is born

By Alan M. Stoughton Managing the files and documents produced throughout a system's life cycle is an important, if often irritating, chore. For large projects in which the developers, support staff, and users are scattered throughout the enterprise, that chore

can quickly become a nightmare. StarBase Corp.'s StarTeam 1.0 provides a set of integrated tools that efficiently tackles development project management problems.

StarTeam keeps previous revisions on file, it's comforting to know you can retrace your steps to the last good version. StarTeam also protects source code through check-in/check-out procedures so one well-meaning developer doesn't inadvertently trash a teammate's work. A defect-tracking tool logs problem reports, assigns responsible team members, and monitors project status. Project reports, charts, and discussion threads can be exchanged regularly using Star-Team's built-in e-mail integration.

Suitable for all audiences

You won't have to worry much about whether you can take advan-

tage of this tool in your existing network environment: StarTeam runs under Windows 95 and Windows NT 3.51; requires only a 486 or higher processor; and is compatible with Net-Ware 3.11, Microsoft LAN Manager 2.1, Windows for Workgroups, 3Com LAN Manager, 3Com 3+ Open 2.0, Artisoft LANtastic 5.0, OS/2 LAN Server 2.0, and TCP/IP.

StarTeam also eliminates multiple learning curves by combining features that usually require separate packages into an all-in-one toolset.

StarTeam works by pulling together project files — specifications, diagrams, source codes, object files, correspondence, schedules, budgets, and presentations — wherever they may be and storing them in a project vault in a public directory. The files are then cooperatively locked, unlocked, checked in, and checked out by registered StarTeam users.

Each user has a local directory for the working copies of checked-out files. As revised files are returned to the vault, earlier versions are not immediately overwritten; StarTeam will retain a specified number of earlier versions. Only those earlier than the specified limit are removed, but any version can be marked as permanent to avoid that fate.

Here's looking at you, kid

StarTeam uses a dual-pane Windows 95 Explorer-like view with a companion menu and toolbar as its chief operating environment. Vault directory-tree branches can be expanded or collapsed to reveal or hide file details. A set of tabs and a drop-down selection list are provided to further qualify and filter the file list.

The tabs add a multidimensional

aspect; they determine whether you see a file listing, a defect synopsis, a revision history, or audit details. Selected file listings can then be filtered using options selected from the drop-down list. Each file-display dimension — files, history, defects, audit — has an associated set of bit-mapped icons to indicate the status of each item.

StarBase has packed a lot of functionality into StarTeam's file management window.

It takes a little getting used to, but

STARTEAM's *defect-tracking system reports provide history and status information.*

it's the key to the product's ease of use and smooth integration of multiple features.

Hype is larger than life

In my first look at the beta version of StarTeam, I reported that follow-on versions would integrate with Microsoft Corp.'s Visual C++ and Visual Basic development environments. (See First Looks, Oct. 16, 1995, page 121.) That capability didn't make it into the final Version 1.0 release, and StarBase won't commit to a date for its next release.

So StarTeam runs as a separate task, which I found a little inconve-

nient. For this review I used StarTeam under Windows NT 3.51 on a Visual Basic 4.0, SQL Server client/server project that was midway through development. User testing was just beginning, and I wanted to keep track of test problems and log user suggestions.

I first collected the Visual Basic code, project specifications, entity diagrams, schedules, memos, and early help system files and defined them as parts of a StarTeam project. Those files, which were under Star-Team's cognizance and organized in a hierarchical structure, were put in the project database on a network drive accessible to every member of the team.

As my users reported problems or made suggestions, I entered each of their comments into StarTeam's defect-tracking system. Later, as the problems were addressed by workarounds or fixes, that information was entered, and I selected the appropriate status code to reflect the current condition. StarTeam assigned problem responsibility and tagged each item with the status, severity, and synopsis I indicated.

Using the built-in interface to my Microsoft Mail account, I sent defect and suggestion listings on a regular basis to all team members and printed a hard copy for my personal use. Source-code revisions followed, and occasionally we went back to a previous version when a suggested fix didn't work out.

Security not a strong suit

StarTeam's security features include password protection and administrative privileges, but air-tight protection isn't its strong suit. Instead, StarTeam encourages cooperation and focuses more on collaborative

communications.

A separate Visual Diff text-comparison utility, which highlights the differences between two files, and an import feature for PVCS Version Manager 5.2 files are bonuses.

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▶ Windows application development software

Eiffel: solid approach to enterprise development

■ Environment includes all you need

By Alan M. Stoughton

SUCCESSFUL object-oriented (OO) implementation begins with understanding the methodology and then selecting a development environment and language. Interactive Software Engineering Inc. (ISE) offers its ISE Eiffel OO method, language, and development environment for serious consideration on large, industrial-strength software projects. For mission-critical application development, Professional Eiffel for Windows NT and Windows 95, Version 3.3.9, provides the necessary workbench and components.

Eiffel's seamless environment presents a unified set of OO concepts, tools, and notations that are used throughout the entire product life cycle. The Eiffel language uses a pure OO approach, as does Smalltalk, and it produces highly efficient code that is like C++. (Its compilers generate C.) Eiffel innovations include assertions, careful attention to inheritance and multiple inheritance, and a strict approach to static typing.

Eiffel has been used to deliver highly reliable and efficient telecommunications, CAD/CAM, and banking applications. It offers cross-platform compatibility with major Unix variants, Linux, VMS, IBM Open Edition MVS, Windows 3.x, Windows NT, and Windows 95.

Eiffel includes a comprehensive set of base libraries and supports many third-party libraries. ISE recently announced Eiffel/C++ inter-

operability to allow leveraging of existing C++ code, incorporation of C++ libraries, and development of applications using both.

I installed Professional Eiffel for Windows NT and Windows 95 on a 120-MHz Pentium machine with 16MB of RAM. The program expects to find a C compiler and make utility in the path and requires about 40MB of disk space for all of its components. The basic Professional Eiffel package includes several modules.

EiffelBench, the centerpiece of the environment, features an incremental compiler/interpreter, a debugger, and browser tools; it generates portable C code for cross development. Eiffel base libraries cover several hundred reusable classes divided among five individual libraries: kernel, data structure, iteration, lex, and parse. And WEL (Windows Eiffel Library) supports Windows-specific graphical applications.

Completing the Eiffel Professional component complement are libraries for client/server and ODBC interfaces. ISE plans to release a portable graphical applications builder; tools supporting Business Object Notation, a numeric and algorithm library; and a drag-and-drop GUI builder before July. Many of these modules are al-

ready available in the Unix and Linux versions of the product.

Eiffel's user interface relies heavily on the use of drag and drop. I picked the name of a class in a tool window with a momentary right-mouse click, and the cursor changed to a small oval with a line connecting to the class object name's position.

Eiffel calls this shaped cursor a pebble; choosing a feature produces a cross-shape pebble, and a system's pebble shape is a cluster graph icon. Unlike in conventional drag-and-drop operation, it's this pebble and not the selected item that is moved to a target location. The target location, called a hole, is an icon with a matching shape on the top of appropriate tool windows for classes, features, and execution objects.

Pebbles are dragged to a matching hole and dropped into it. We know that square pegs don't fit into

Eiffel's workbench provides fast compilation, debugging, browsing, and other handy testing tools.

round holes, so — you guessed it — an oval pebble can't be dropped into a feature's cross-shaped hole. This novel visual prompting illustrates Eiffel's strong typing philosophy.

Eiffel's GUI doesn't follow Windows conventions, but the documentation is clear, and, after a little practice, I found it reasonably intuitive.

Built-in help and the capability to quickly search for a help topic are conspicuously absent, but the Eiffel

manuals are very complete, and most include tutorial sections.

Two of the 10 underlying OO concepts supported by Eiffel are reflected in features that I found to be particularly interesting: design by contract and automatic memory management.

Design by contract integrates elements of a program's specification with the software. These elements, called assertions, describe the initial conditions that should be satisfied when calling an object's feature (or using one of its methods, as they are called in some environments) and the conditions that will be true on return. For example, the precondition for a routine to calculate the square root of n would be true >= 0; its post condition for the result would be r * r == n.

Assertions are useful during early analysis, serve a valuable role in documentation, and assist debugging. A compiler that supports assertions can generate code that checks assertions' conditions at run time and triggers exceptions if violations occur.

Automatic memory management reclaims the memory used by objects that are no longer needed or accessible during system execution. This reclamation, known as garbage collection, relieves developers of the error-prone task of manual memory management and leads to overall performance enhancement. Garbage collection overhead is not noticeable in most applications, and, for those applications with extremely demanding time constraints, Eiffel's Memory class provides a method for disabling it.

Eiffel offers three compiling mechanisms based on its Melting Ice Technology: melting, freezing, and finalizing. Melting, the fastest method, compiles incrementally, based on the logical size of changes. In small systems, the time to recompile the whole system may not be bothersome, but in large projects (hundreds of thousands of lines of code, for example) melting lets de-

velopers quickly see the results of relatively minor logical revisions without C code modification.

Freezing, a companion to melting, implies C code regeneration and brings the melted parts of the program back to the same compiled state as the parts that haven't been changed.

Finalizing generates an extensively optimized, self-contained module that can be independently executed on EiffelBench.

(Melting is the only option available in the ISE Eiffel Personal edition, a low-cost package intended for students and home PC users.)

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▶ Windows address-correction and presorting software

Group 1 Software gets grip on bulk mail

By Geoffrey Hollander

SOONER OR LATER, your company will want to — perhaps have to — harness the power of direct mail. That means using bulk mail. Group 1 Software now offers an answer to bulk-mail management with the Smart Marketing Suite, Version 1.0. SMS is a modular union of applications that will condition your list for maximum deliverability and prepare

your mail to travel at the lowest possible rates.

All of SMS' list management functions run from a single screen called the Smart Marketing Director. Its main function is to build projects. Composed of selected mailing lists and the specific tasks you wish to perform, projects are flexible enough to perform the same action on several lists, several actions on the same list, or combina-

tions of both. Projects also hold mailer and permit information for immediate recall when generating mailing paperwork.

Group 1 designed the Smart Marketing Suite to be modular, so users can choose individual mailing applications that apply to existing needs and add on applications to suit future needs. Currently, SMS contains two separate applications: AccuMail and ProSort. A merge-

purge module should be in beta near the end this month.

AccuMail is a venerable address-cleaning and coding product that matches your addresses to the U.S. Postal Service National Database of deliverable addresses. Group 1 sends the National Database, updated and reissued quarterly by the Postal Service, on CD-ROM to subscribers.

AccuMail uses the database to correct and standardize addresses with misspelled or missing components to its missing or incorrect five-digit ZIP codes; and to add ZIP+4 extensions, carrier-route codes, and

delivery-point codes. Once finished, AccuMail will generate the required 3553 CASS (Coding Accuracy Support System) Certificate required by the post office to validate your list's deliverability.

If AccuMail can't make a decision on an address, it will mark the record for later editing. You can then correct marked records with a Browse option that displays the National Database information that's the nearest match to the address you're correcting.

AccuMail is one of the fastest coding programs available for the

► Personal digital assistant

You can take it with you: Pilot puts information in hand

By Dylan Tweney

YOUR DESKTOP computer has one major shortcoming as an information organizer: it doesn't fit into your pocket.

But put the data from your PC's personal information manager (PIM) — appointments, to-do lists, and addresses — into a pocket-size computer, and you can carry that information with you through the day, consulting it as needed.

It's not some futuristic Star Trek device I'm describing, but the Pilot 1000, from U.S. Robotics Palm Computing Division, which began shipping on April 29.

The Pilot is about the size of a 3-by-5-inch card, is less than three-quarters of an inch thick, and weighs about 6 ounces — small enough to fit in a pocket or purse. It has a touch-sensitive LCD and several buttons below the display that are used to bring up the Pilot's primary applications: a datebook, address book, to-do list, and a free-form text memo pad. In addition, the Pilot includes a simple calculator and some utilities. A plastic stylus for writing is tucked into a slot on the right side of the Pilot.

You interact with the Pilot by tapping on items displayed on-screen to select them or by writing letters and numbers using Palm Computing's Graffiti writing system. Instead of adapting itself to your handwriting style, Graffiti requires you to use a special alphabet composed of single-stroke letters. You write these characters one on top of the other in a box at the bottom of the Pilot's screen, and the text appears in the main part of the screen above. If you can't remember how to write a particular character, it's easy to call up an on-screen keyboard and enter text from there.

I found that Graffiti's special characters were not difficult to learn, but the system did take a little getting used to. After Graffiti's novelty wore off, I mainly used my PC to enter data into the Pilot. The Pilot has been designed from the ground up to connect with the desktop. Drop it in the provided cradle, which connects to a serial port on your PC, and the Pilot becomes a portable peripheral, capable of synchronizing its data (with a push of the cradle's HotSync button) with your PIM or other desktop applications and then allowing you to take that data on the road.

The Pilot is bundled with Pilot Desktop, a PIM whose applications mirror those of the Pilot itself. It's a simple program to use, but it lacks the flexibility and power — or high-end PIMs.

I used Pilot Desktop to enter appointments and contact information, load the text of some news ar-

THE PILOT'S CRADLE lets you synchronize data with your PC, easing large-scale data entry.

ticles into the memo pad for later reading, and even create a shopping list using the to-do list program. After synchronizing with Pilot Desktop, I hit the road. I found it very easy to browse through this information by pushing Pilot's buttons and tapping on the screen with the stylus.

Pilot's address book, datebook, to-do list, and memo pad all let you categorize records and then display all categories or just a selected one. For example, this feature allows you to easily switch between viewing personal to-do items and business tasks. The Pilot's Find command lets you quickly locate text stored in any of its applications. So if you can't remember which day you're meeting Mr. Jones for tea, just enter a search for "Jones," and the Pilot displays all the records (whether appointments, address book entries, to-do items, or memo pages) containing that text.

The Pilot 1000 has 128KB of static RAM (SRAM), in which your data and optional added applications are stored. (The Pilot's operating system and its main applications are stored in ROM.) The Pilot 5000 is identical to the Pilot 1000 except that it contains 512KB of SRAM. Either model can be upgraded to 1MB by replacing the memory module (available from U.S. Robotics for $149) in the back of the unit.

One shortcoming of the Pilot is that it has no digital-ink application, which would simply record pixels as you drew on the screen and then save the image as a graphic file that could be redisplayed later. Such a program would be useful for sketching maps or diagrams or for scribbling notes to yourself at a faster rate than is possible with Graffiti's text entry.

Another nice feature would be an infrared data port for wireless synchronization with your PC or for exchanging electronic business

cards with other Pilot users. For now, the Pilot can only synchronize with a PC that has the Pilot HotSync software installed, and it needs the cradle (or a smaller, more portable serial cable available from U.S. Robotics) to do so.

Currently, the Pilot Desktop is the only program that can exchange information with the Pilot. But many vendors are currently working on "conduits" to synchronize the data in their applications with the Pilot. When these programs become available, you'll be able to save your existing PIM to exchange data with the Pilot. Applications that will work with the Pilot include Franklin Quest's ASCEND, Lotus Organizer, Microsoft Schedule+, and Eco Professional.

But PIMs may be just the tip of the iceberg. Palm Computing provides an software developer's kit for the Pilot's operating system, Palm OS, so third-party vendors can develop their own Pilot-based programs. According to Palm Computing, nearly 500 developers are currently working on Pilot applications. The Pilot's Motorola 68000-class CPU should provide enough power to make some very interesting applications possible.

Only time will tell if the Pilot is just a fancy toy or the start of a new kind of portable computing. But with its low price, you'll almost certainly be seeing it in a lot of hands soon. And a broad user base might be just what will stimulate development of a variety of applications.

Pilot 1000

The Pilot 1000, a hand-held digital assistant about the size of a 3-by-5-inch card, is based on the Palm OS and allows developers to create a variety of portable programs that synchronize with desktop applications. Currently, a personal information manager, supplied by Palm is the only available application, but other third-party applications are in the works.

Pros: Small form factor; easy synchronization with desktop data via docking cradle; accurate Graffiti handwriting recognition; long battery life

Cons: Lack of applications needed for stand-alone data entry; limited Pilot Desktop program and expert features

U.S. Robotics Palm Computing Division, Los Altos, Calif. (800) 881-7256; (415) 949-9560. http://www.usr.com

Price: Pilot 1000 (128KB of RAM), $299 estimated street price; Pilot 5000 (512KB of RAM), $369 estimated street price

Platforms: Windows 3.x, 95; Macintosh System 7 version due this summer

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SMS

PC. My 150-MHz Pentium, with all the AccuMail files on the hard drive, will process as many as 750,000 records per hour on a list of average difficulty. Speeds will vary according to your equipment, AccuMail configuration, and your list's coverage, density, or complexity. You can choose how much of the National Database to load directly onto your hard drive during installation. You get the fastest processing speed by loading the whole package.

ProSort, the second application in SMS, is in its first Windows incarnation. ProSort sorts and groups your records for output in Postal Service presort order. ProSort will produce a list in your chosen presort order with all the necessary sack or tray labels and Postal Service paperwork. ProSort offers First, Second, and Third class levels — with regular and nonprofit rates.

Both ProSort and AccuMail will process xBase and ASCII fixed field and delimited files directly — as well as those used by ArcList, another Group 1 product — so there's no need to constantly import and export records to generate your mailings. For sorting, SMS builds and uses temporary files that will not conflict with your database's existing indexes. ProSort will currently output presorted labels and ASCII delimited files, or it will mail

Smart Marketing Suite, Version 1.0

Smart Marketing Suite offers three modules, AccuMail and ProSort, to ease your mass-mailing woes. AccuMail is fast and efficient, but ProSort needs to become competitive in its output options and list processing.

Pros: Fast, well-organized; capability to batch or configure projects and the jobs they contain for processing efficiency; performs most presort levels.

Cons: No record filters; lacks capability to process mailing or residual sections; limited presort output file formats.

Group 1 Software, Lanham, Md.; (800) 368-5806; (301) 731-2300; fax: (301) 306-4373.

Price: $1,369 for AccuMail (one-year subscription) and ProSort.

Platforms: Windows 3.x (with Win32s), Windows 95.

your existing xBase file with presort information.

Like AccuMail's, ProSort's speed is impressive. On the same 150-MHz Pentium, I was able to send a list of 79,415 records through a complicated carrier route presort with an automated residual in only 3 minutes, 35 seconds.

Although SMS is a fast, accurate, and solid performer, there are some design problems that call out for correction. SMS doesn't provide a

way to filter records, so it's impossible to code or presort only a segment of your main list, unless you first export a selection to another file before processing — a time-consuming and inefficient process.

And because lists don't usually qualify for maximum postal discounts in their entirety, bulk mailings are typically divided into two distinct submailings when submitted to the Postal Service: a primary list of qualifying records and a residual list with whatever is left over. So most mailing applications output presorts as two segments also, along with the respective paperwork.

But ProSort outputs everything to one file, with one comprehensive set of reports and forms. This approach simply isn't efficient for most letter shops (mass-mailing professionals). If you work with a shop that's used to the more common two-mailing format, you're likely to encounter problems or incur extra processing costs, as I did.

In addition, ProSort has to offer a wider range of output file formats, including xBase and label print image, as well as formats for the larger ink-jet labelers.

All in all, SMS is an idea whose time has come. I expect it to mature into a leading application as new features and modules are added.

Geoffrey Hollander is a consultant, trainer, and writer on database and computer issues. His Internet address is mpash@europa.com.

PRODUCT REVIEWS

DOWN TO THE WIRE · NICHOLAS PETRELEY

Fine Lotus components can't be all they could be when using ActiveX

LOTUS DEMONSTRATED Lotus Components at InfoWorld last week. It was an impressive display. These components are a wonderful escape from fat, slow, and problem-prone OLE or from the limitations of attaching large spreadsheets to Lotus Notes documents. (Watch for the review of Lotus Components next week.)

The initial set of components includes a spreadsheet, chart, file viewer, project scheduler, drawing tool, and post-it note. There are no fine-grained components such as a sound player or fancy list box. There's a good reason why, but we'll get to that in a moment.

One thing I really like about Lotus Components is that they are tuned to ease the transition from using legacy monolithic applications. The spreadsheet component imports data from various sources, for example. It even lets you use some Excel data entry conventions in addition to functions (like Lotus 1-2-3).

The good, bad, and pretty

Lotus Components are wonderful examples of large-grained components. The problem is they require ActiveX, which perpetuates some of the very problems of monolithic software that components were supposed to solve — limited platform support, massive storage requirements, and feature bloat.

Take storage, for example. When you drop an ActiveX component into a document, it doesn't just store data — it stores ActiveX code, too. Lotus says the average size added to

a Notes document is 150KB for each component you add *before you enter any data*.

In contrast, OpenDoc stores data, not code. The executable code for each component lives in the form of a local or remote viewer (which vendors should make freely available so that anyone can view an OpenDoc document) or a part editor (this, on the other hand, is what you would *pay* for).

When OpenDoc or ActiveX, someday you're going to drop in a spreadsheet component and find that it's missing the one feature or visual object you really want or need. Unfortunately, ActiveX parts aren't containers, so you can't add what you want by embedding another part (hence the lack of fine-grained components in the suite).

You could call Lotus and ask them to add the feature to the spreadsheet component. But suppose they did. They add greater features, along with the 500 features other folks have requested. Version 2.0 of the spreadsheet component now adds half a megabyte or more to your Notes document when you drop it in. We're right back to the monolithic model.

OpenDoc, on the other hand, was built to support exactly that level of unlimited granularity and modularity. You drop into your OpenDoc spreadsheet component another OpenDoc part that adds the single feature you want at the moment. Best of all, you can choose to leave it out tomorrow.

This is how the true potential of component software will be realized — when you can take

various-size components and combine them in whatever way it takes to get your work done. Best of all, even if someone is silly enough to design an OpenDoc part like a monolithic application, it will still add little more to your target document than the raw size of the data.

The fact that OpenDoc stores only data also has the side benefit of letting your recipients choose between part editors, if more than one is available. If the spreadsheet data is in a commonly used format, there's no reason someone could not use his or her favorite OpenDoc spreadsheet component to edit your data, rather than use your brand of component. And because OpenDoc stores only data, there is no danger of proliferating viruses or Trojan horses when you share documents.

As for platform independence, all these components will run on right now is Windows 95 or Windows NT. Lotus is not planning to port the components to Windows 3.1. Microsoft is promising Macintosh support for ActiveX, but if one of your users with Notes for Windows 3.1, Macintosh, Unix, or OS/2 gets a document with an ActiveX component, all they'll get is a rendered graphic where the component should be.

That's yet another reason Lotus should have used OpenDoc. Lotus' choice to develop for ActiveX for a Notes-targeted product negates one of the strongest features of Notes — its broad platform support.

Timing is everything

I posed these arguments to the folks from Lotus, and I find it interesting that they offered neither defense nor objection. The choice to go with ActiveX had nothing to do with technology and everything to do with timing.

OpenDoc is doing well on the Macintosh with Apple's magnificent CyberDog Internet

suite. Even Spyglass is turning its browser into a set of OpenDoc components (ironically, that's the browser Microsoft licenses for Internet Explorer). But OpenDoc isn't ready yet on Windows, and it would have understandably looked bad for Lotus to fall behind other Windows vendors preparing ActiveX components.

Fortunately for Lotus, its components are so appealing on the surface that they will certainly sell. Lotus Components will popularize the technology in general, despite the flaws of ActiveX. The question is, when people get the itch and find it hard to scratch with ActiveX, will they then turn to OpenDoc? If great OpenDoc components make it to Windows before ActiveX gets entrenched, I have no doubt ActiveX components will fizzle. The technological gap between the two is too broad.

If not, ActiveX will become the de facto standard, contrary to a recent prediction of mine. Unfortunately, by the time people begin to realize how bad ActiveX technology is, it could be as ubiquitous as Windows. As with Windows, most won't get rid of it; they'll just wait for it to get better.

If that happens, components will reach their potential three to five years later than they should, but I'm confident they'll get there. Of course, OpenDoc users will boast about how they were there first and be widely regarded (like OS/2 and Unix users are today) as neo-conformists who are patronized by "realists" who can never understand why technical people can't seem to be happy with good enough. Even when it's so darned bad.

Your e-mail is always better than good enough. Send me some at nicholas_petreley@infoworld.com or visit my forum at http://www.infoworld.com.

▶ Macintosh color ink-jet printers

Apple printers offer entry-level color

By John Spragens

APPLE COMPUTER INC.'s newest Color StyleWriters, the 1500 and the 2500, will be more at home at home than at work.

But small Macintosh-based workgroups (neither printer can connect to PCs) may find the Color StyleWriters' small footprint appealing and their print quality adequate for occasional overhead transparencies or other special projects that need a touch of color.

At rest, neither printer takes up even a square foot of desk space. But when you're printing, you'll need the extra room to pull out the 2500's output tray; the 1500 has no output tray, but you'll need room

for the paper to emerge from the front of the printer.

The 2500 comes with a four-color ink cartridge and prints at 720 by 360 dpi. An optional black-only cartridge is available. The 1500 comes with three-color and black-only cartridges. It prints at 360 by 360 dpi in color and at 720 by 360 dpi in black.

In my test, color output from both was well balanced, with the exception of a solid yellow in one of the graphics I printed; both printers gave it a muddy cast. The 2500, as expected, had truer blacks in its color prints. Sharpness was in line with the resolution numbers —

APPLE'S COLOR
StyleWriters offer a compact form factor but no PC connectivity.

more than adequate for most presentation transparencies. Print quality was reasonable on standard office paper and noticeably better on special coated ink-jet papers. Both printers will also accept labels

and standard business envelopes.

An optional adapter can connect either Color StyleWriter to an EtherTalk network.

Apple's Color StyleWriters are inviting entry-level color printers, but with limited compatibility and narrowly acceptable print quality, they are fighting one-handed in a very competitive market. For about the same street price as the 2500, for example, you could buy Epson America Inc.'s Stylus Color II, the successor to the top-ranked Stylus Color, which connects to both PCs and Macs and provides superior color quality (See Product Comparison, Nov. 28, 1994, page 90.)

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THE BOTTOM LINE

Color StyleWriter 1500 and Color StyleWriter 2500

Macintosh-only shops with limited budgets and desk space may find one of these printers from Apple an appropriate way to add color printing capabilities.

Pros: Compact; produces decent color quality on envelopes and labels as well as paper and transparencies.

Cons: Can't connect to PCs; can't compete in print quality against higher resolution printers in the same price range.

Apple Computer Inc., Cupertino, Calif.; (800) 538-9696, Ext. 525; fax (800) 462-4396, in Canada (800) 263-3394, http://www.apple.com.

Price: Color StyleWriter 1500: $280 estimated street price; Color StyleWriter 2500 $580 estimated street price.

Platform: Macintosh.

DISTRIBUTED THINKING · STEWART ALSOP

Thanks but no thanks, I don't need any extra help from Windows Registry

O K. HERE'S THE DEFINITIVE word on the Windows Registry. It sucks, at least as it relates to installing new applications software.

A small recap first. I wrote a column that accused Microsoft Corp., at least in the case of Internet Explorer, of sneaking around on my hard disk, redefining things — including which program used .htm files by default — without asking for permission. (See "Microsoft sneaks around my desktop; Netscape looks out for the rest of us," April 15, page 134.) Then, thanks to hundreds of readers, I discovered that this is normal behavior for all Windows 95 programs, including Netscape Navigator. Many readers told me Navigator had been particularly nasty in previous versions, including those for Windows 3.1, adding insult to injury by sometimes removing files needed by Microsoft's Internet Explorer when Navigator was uninstalled.

Microsoft told me proudly it had recognized Navigator's grabbing of the .htm extension as marginal behavior and had prompted the solution now in use: Every Web browser would anticipate that its ownership of the .htm extension might be grabbed by another browser and would therefore check the Registry every time it was launched to see if it had

lost the right to use the .htm extension and ask users if this is what they really wanted.

I had been thinking I'd written far too much about this issue, except for two things. I've gotten an extraordinary amount of mail about these columns, which indicates that a lot of people are struggling to get a handle on Windows 95. And I still can't believe that Microsoft believes this is a user-friendly solution to the problem or that anyone thinks this feature of the Registry is a step forward in human-computer interface!

So here's the current situation: Every time you download a browser for Windows 95 and install it, it will automatically define itself as the program that launches when you double-click on a file with the .htm extension. And it will associate all such files with its native icon. It will not ask if this is what you wanted. But the next time you launch the browser you previously installed, that browser will check to see if the Windows Registry has been changed and ask you if you really wanted another pro-

gram to own that extension or if you want control turned back to the browser being launched.

In other words, Microsoft's solution is to ask you if you really wanted to do something you were never asked if you wanted to do in the first place. Installation almost always involves a certain amount of option setting, so why didn't the company just include as part of the standard install procedure a dialog box that asks you to make the following choice: *Do you want to make this program the standard*

program for opening World Wide Web documents on your hard disk? Yes. No.

The real irony of this is that the HTML format for Web documents is supposed to be invisible to programs so these documents can be opened through the mechanism of the URL, which stands for Universal Resource Locator. Universal. Get it? Accessible from anywhere in the universe by any program in the universe. That is one of the key reasons that Web browsers have become such a force in the world of PCs. So it is only when such documents are stored on your local hard disk that this becomes an issue. And it is only an issue when they are stored on a hard disk managed by Windows 95, because Windows 95 has this thing called the Registry where every program is supposed to register its requirements to be a cooperative member of the world of Windows 95 programs.

But cooperation in a Microsoft environment has a different meaning than most would imagine. The issue of program grab-

bing extensions is not limited strictly to Web browsers. It is a major issue for any standard file format that might be used by more than one program: text files stored with the .txt or .doc extensions; graphics files stored in the .bmp, .tif, or .eps formats; databases stored in the .dbf format (if there are any left).

So a lot of the mail I got complained about one program or another secretly grabbing all the file extensions it wanted when it was installed and producing completely unexpected and unintended results for the user. Indeed, many users are avoiding installing any new program unless they know in advance that they really, really need it. Great way to promote the safe exploration of the functions of a computer, huh?

This doesn't happen on the Macintosh or in OS/2. That's because the idea of a standardized file format is different from the idea of a file format owned by a specific program. So Microsoft Word on the Macintosh can read many different text formats, but its own native format — the one that launches the program when you double-click on it — will only launch Microsoft Word. WordPerfect doesn't get the right to grab that file format unless the user decides to change the format of that file.

I remember Bill Gates used to give speeches about the idea of softer software. He was talking about the idea that the operating system, or even individual applications, would learn how a user liked to work and would adapt itself to the user's needs over time. Here we are in 1996 using the fourth major revision of Windows. And we're still dealing with stupid, hard software that doesn't even ask what users want, much less learn from them. It's kind of disappointing.

Write to Stewart Alsop at stewart_alsop@ infoworld.com.

NOTES FROM THE FIELD · BY ROBERT X. CRINGELY

Zenith is giving way to Packard Bell just as age gives way to youth

M Y FATHER, Col. Xavier Cringely, is staying with Pammy and me this week. It has not been easy.

The Colonel, a retired career officer of unbending severity, appeared in our bedroom this morning, humming reveille.

My dad then suggested an invigorating morning run. Pammy snorted sleepy, contemptuous refusal, but within the hour I was wheezing and weeping up the hills behind Stanford, while my 74-year-old father — head held high, chest thrust out before him — trotted on ahead.

Past its Zenith

True to form, I have a computer analogy for this week.

The younger generation doesn't necessar-

ily deserve to inherit the earth — it just does. My father is the Hero of Hill 413, a forgotten battle on Iwo Jima; I spent my-my-my generation's war in a beaded dashiki, chanting, "Hey hey, LBJ..."

It's the same with Zenith Data Systems and Packard Bell. Word is that ZDS is in trouble and all its assets could be folded into the younger, more affluent company. ZDS, founded in 1979 at the tail end of the minicomputer era, developed some great products. What's Packard Bell done? Licensed that fabulous Arc interface. Meanwhile, Zenith isn't taking purchase orders, and the company's engineering staff can't be found.

Of course, our industry provides continuous instruction on the ephemerality of vigor. Even once-mighty Novell has had to work with brash, young Netscape.

In San Diego last week, Novell's Vic Langford told the company's resellers that Novell was negotiating with Netscape to make Netscape server applications available to Netware users as NLMs.

Vultures on the Vines

"Bobby," Pammy asked when I was back home, laid out flat on our bedroom carpet, "how did you turn out so different from your father?"

"Years of expensive therapy," I replied. "Besides, I didn't have the nerve."

Getting back to business: Banyan is another company whose shareholders keep glancing nervously at a sky full of circling vultures.

At the spring fling of my charming friends Christine and Mark, I heard that John Curtis, Banyan's COO, and Ed Cloutier, another senior Banyan executive, had been ousted by the company's not-so-charming chairman, David Mahoney.

That was apparently the last skirmish in a civil war where Banyan's vice presidents have been trying to wrest control of Banyan from Mahoney. They were disgruntled because of Banyan's depressing recent history: Q1 results

show a 90 percent decline in earnings compared to Q1 '95. *Smart Money* called Banyan stock "buzzard breath."

Seeing how so many of you wrote in about the Excel 95 Easter egg, here's one for VC++ 4.1. Select About Menu from the Help Menu. While holding down the Ctrl key, double-click on the "Square" icon in the left-hand side of the dialog box. It's quite cool.

MY FATHER called me in from the guest room: "Squeaky! I've got a great idea! Let's visit Uncle Xerxes at the military cemetery in the Presidio. And afterward I understand the army band is playing its all-time greatest hits."

He wandered off into another room, murmuring, "I think the Korean War medals would be most appropriate ..."

"Call the airline," I whispered to Pammy. "I'm leaving you here with Dad. Now seems the perfect time to go home to Ohio for Mother's Day."

Now you know what the X stands for. Call me with industry tips at (415) 312-0555; fax: (415) 286-2775, or cringe@infoworld.com.

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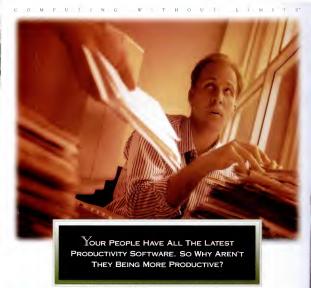
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